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STUDY ON THE HARMONIZATION AND CO-ORDINATION OF THE VARIOUS TRANSPORT MODES IN AFRICA

CONSOLIDATED REGIONAL REPORT

NOVEMBER 1987

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Background

1. The ECA Conference of African Ministers of Transport, Communications and Planning in its Resolution ECA/UNTACDA/Res.83/23 of 11/3/89 adopted in Cairo, Egypt Inter alia requested the Economic Commission for Africa to carry out a study on the harmonization and co-ordination of the various transport modes in the entire African region.

2. In compliance with the resolution, ECA prepared draft terms of reference, covering all the transport modes that play a significant role in intra-regional transport activities, as well as transport economics. The studies were carried out on subregional basis, (i.e. West, North, Central and Eastern/Southern African subregions) for subsequent consolidation into a regional study.

3. The immediate objective of the study is to provide a basis for the development of the various transport modes in Africa on a harmonized, co-ordinated and integrated basis, while the long term objective is to establish a rational integrated transport system in Africa, which adequately responds to existing and future transport demand, promotes development and expansion of intra-African trade and contributes to social and economic integration of the region.

4. This report is the Consolidated Regional Report of the entire study and derives largely from the findings, conclusions and recommendations contained in the consolidated subregional reports. The ultimate objective of this report is to (i) determine and/or show through critical analysis, the strengths and weaknesses of each subregion in the efforts to harmonize and co-ordinate the various transports modes and (ii) to evaluate and delineate the transport modes that offer better prospects and optimum advantages in the harmonization and coordination of transport infrastructures, facilities and services in Africa as a whole. Finally, if and where possible, some general recommendations have been made.

5. It should be emphasized that modal reports have been prepared on roads and road transport, railways, maritime/ports, air transport and inland water transport for each of the four subregions. These reports provide information on the conditions of infrastructures, capacities, traffic flows and other variables specific to the modes. In addition to the above, reports on transport economics and multimodal transport (i.e. subregional consolidated reports), largely based on and utilizing data and information in the modal reports to evaluate and present a consolidated subregional perspective, have been prepared for each subregon.

6. As such, the primary objective of this consolidated regional report on the harmonization and co-ordination of transport in Africa is to present a global regional perspective on the feasibility and modalities of achieving regional co-ordination and harmonization of transport in Africa, in and through those modes that offer the potential and feasibility as indicated by analysis and evaluation of the findings and conclusions of the subregional consolidated reports. In short, this report is a logical forward progression and culmination of the studies on harmonization and coordination of the various transport modes in Africa.

7. Part I of the report is a summary review of the major finding and conclusion of the subregional consolidated reports. It selectively highlights the strengths and weaknesses of the various modes, and particularly how well they have been or can be harmonized/co-ordinated at the subregional level.

8. Part II of the report is on analysis or evaluation designed/intended to validate and select those modes that already provide inter-subregional links and/or have the greatest potential for regional harmonization and co-ordination based on their inherent advantages, characteristics, widespread utilization and above all, their amenability to regional harmonization and co-ordination.

9. Part III is the summary and conclusion which recapitulates the major findings and makes some proposals and/or recommendations on how best the Economic Commission for Africa would like to see the development of transport harmonization and co-ordination in Africa.

PART I

Subregionals Review

10. As indicated in para. 7 above, this section of the report is a summary of the major findings and conclusions of the subregional consolidated reports on the harmonization and coordination of the various transport modes, proceeded by a brief socio-economic background.

West African subregion[1/]

A. General Socio-Economic Scenario

11. The West African subregion is made up of 16 countries (see Table I) with a combined total population of about 163.5 million (1983 estimate). The largest of the countries is Nigeria, with 93.6 million inhabitants while the smallest is Cape Verde with 0.3 million. The total area is about 6,140,195 km^2 and the individual national territories vary from 3,929 km^2 for Cape Verde to about 1.3 million km^2 for Niger. Similarly the population densities vary from 2 persons per km^2 for Mauritania to a high of 76 for Cape Verde.

12. A comparison with other African subregions would tend to indicate that the subregion is not over-populated, but such conclusion belie the facts that: (i) urban population growth is fairly high and large population concentration is fairly common in the capital cities; (ii) a substantial part of the area is made up of desert (Mali, Burkina Faso, Niger), tropical swamp, jungle and forest, which are not condusive for habitation and (iii) the provision of adequate, reliable and cheap transport services over such a large area with varied and difficult topography is not only extremely expensive but difficult.

13. The combined GDP of the subregion for 1983 (see Tables 2 and 3)* was about US$87,705 million and the distribution ranged from US$132 million for Guinea Bissau to US$64,570 million for Nigeria. During the period 1973 to 1983, average annual GDP growth rates in none of the 16 member countries exceeded 5.2 per cent, achieved only by Niger. Four countries achieved growth rates of about 4 per cent, 3 countries of about 3 per cent, another 3 about 2 per cent and one country (Ghana) registered a negative growth rate of 1.3 per cent.

14. Within the major economic sectors, there was no appreciable pattern of growth, although five countries (Benin, Gambia, Guinea, Niger and Senegal) achieved average annual growth rates ranging from 6.1 to 10.9 per cent in the industrial sector. Three countries (Benin, Guinea Bissau and Niger) had growth rates ranging from 5.9 to 8.4 per cent in the services sector. Conspicously lagging was the agricultural sector, in which only Mali managed a 5 per cent average annual growth rate during the period.

1/ For details, see document E/ECA/TRANS/45.

* All tables referred to in this report are those contained in E/ECA/TRANS/45 and have not been reproduced in this report.

15. The 1983 GNP per capita shown in Table I, indicates that Mali has the lowest per capita (US$169), Nigeria and Ivory Coast the highest (US$700), while seven other member countries range from US$300 to US$480. The average annual growth rate of GNP per capita during the period 1965 to 1983 has been dismal over-all, with absolute decline for three countries, only Nigeria was able to register 3.2 per cent growth, mainly as a result of oil exports.

16. Coupled with the above, has been the very high rate of average annual inflation during the period 1973-1983. The lowest (4 per cent) and highest (51.6 per cent) rates of inflation were recorded by Guinea and Ghana, respectively, and ten out of the 16 countries had double digit inflation during the period.

17. The economies of all countries in the subregion largely depend on agriculture, a small industrial sector and a moderate to average services sector. A comparative analysis of GDP distribution (see Table 3) shows that there has been a general decline in the agricultural sector, a moderate increase in the industrial sector and a reasonable increase in the services sector. It should however be pointed out that the minor and moderate increases in the industrial and services sectors over a period of eighteen years are due to the fact that the base on which the comparison is based was almost negligible. On average, the services sector now represents about 45 per cent of GDP, with omnious economic implications that since the productive sectors (agriculture and industry) have shown no significant growth, the economies have largely remained in recycling activities, since there has been no marked increase in production and export.

18. While a modeate to average (20 to 30 per cent) services sector is desirable for an economy, it should be based on higher components of the productive sectors (agriculture and industry) or on specialized services, which is not the case in most African countries.

19. Table 4 shows that public sector consumption increased only marginally in four (Ghana, Niger, Senegal and Togo) out of the 16 countries between 1973 and 1983, while there was a decline in the rest of the countries. Private sector consumption did no better, with marginal increases in Benin, Burkina Faso, Mauritania, Niger and Senegal during the same period. Only three countries (Benin, Mali and Sierra Leone) registered positive gross domestic investment during the period under review.

20. Data on the Balance of Trade is given in Table 5. These are no better than the other economic indicators. Basically, only six countries (Ghana, Guinea, Ivory Coast, Liberia, Mauritania and Sierra Leone) had a positive balance of merchandise trade in 1983. It should be pointed out that this does not include services and does not necessarily correlate to the overall balance of trade. Between 1973 and 1983, all the countries except Burkina Faso, Mali, Mauritania, Niger and Togo, registered substantial decreases in exports, while on the import side Ghana, Liberia, Mauritania, Senegal and Sierra Leone recorded declines. In essence, due to low export earnings, most of the countries simply imposed import restrictions. It should be noted that with the exception of Nigeria and Togo (due to oil and phosphate exports), all the countries of the subregion experienced adverse terms of trade.

21. With regards to balance of payments, debt service and international reserves, the overall situation has also been desquieting (see Table 6). The total current account deficits have increased from US$501m in 1970 to US$6259 million by 1983, while interest payments on external debt has gone from US$59m to US$1511 million during the same period. Similarly, the debt service ratio as a percentage of either GNP or export of goods and services have both increased substantially.

22. It should be mentioned that while public borrowing has generally increased between 1970 and 1983, the average interest rates have increased and the average maturity and grace periods have declined.

23. Detailed information on population, growth rates and projected population by the years 1990 and 2000 is given in Table 7. In general, the population growth rates which were fairly high between 1973 and 1983, since they invariably exceeded economic growth rates in all the countries, are projected to further increase during the period 1980 to 2000. As a result, the total population of the subregion is projected to increase from 162 million in 1983 to 205 million and 276 million by 1990 and 2000, respectively. This is so, in spite of the fact that the most optimistic forecast shows that even after economic recovery and sustained growth, the population growth rate is still likely to exceed the economic growth rate, unless the latter increases substantially and fairly rapidly.

24. The above review clearly indicates that the economic performance of the entire subregion has been generally dismal over the past one and a half decades, and while the recent prevailing world economic recession, coupled with drought and other natural calamities have definitely contributed to the poor economic performance, the basic cause lie in the economic structure and policies - which are basically export oriented and internally unco-ordinated. While the objective of this study is not to propose solutions to the economic problems of the subregion, it should be pointed out that the poor performance of the subregional economy has a direct effect on the capability of the subregion to provide adequate transport infrastructure, equipment/facilities and effectively maintain and utilize them.

25. While the above is generally true, it does not necessarily follow that the economic decline of the subregion has or must be followed by decreased demand for transport services, as evidenced by the massive influx of international food aid and other emergency supplies into Africa and the subregion, which invariably required increased transport services for their distribution.

26. There is ample evidence that the poor performance of the subregion's economy can be partly attributed to inadequate transport infrastructure, inefficient and unreliable services and the relatively high cost of the services. In essence, adequate, reliable, efficient and reasonably priced transport services do contribute to improved economic performance.

Current and future economic growth prospects

27. The 16 countries of the West African subregion are all members of the Economic community of West African States (ECOWAS), which was established in May 1975. The treaty establishing the Community states that "... the aim of the Community (is) to promote co-operation and development in all fields of economic activities particularly in the fields of industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial questions and in social and cultural matters for the purpose of raising the standard of living of its peoples, increasing and maintaining economic stability, fostering closer relations among its members and contributing to the progress and development of the African continent".

28. The treaty is quite comprehensive and provides policy objectives for harmonization/co-operation in Customs and Trade matters; freedom of movement and residence; industrial development and harmonization; co-operation in agriculture and natural resources; co-operation in monetary, and financial matters; development of Transport and Communications infrastructural links; and establishment of a fund for co-operation, compensation and development, just to mention a few.

29. With regards to the specific articles on a common transport and communications policy, the Treaty requires member States to gradually evolve common transport and communications policies through the expansion of existing and establishment of new facilities as a means of enhancing physical cohesion and promoting greater movement of goods, persons and services within the Community. Other Articles deal specifically with the development of all-weather inter-state roads; inter-connection of railways; harmonization and rationalization of policies on shipping and international waterways; and on merger of national airlines and joint training facilities.

30. The West African subregion is served by the following modes: air, rail, roads, maritime including coastal shipping and ports, and to a lesser degree by inland water transport. A brief summary of these modes follows below.

Air transport

31. The subregion has several international airports but only a few of them are well equipped for 24-hour services. The main infrastural problems are runways limitation for wide-body aircraft, poor terminal layout, combersome procedures or lack of facilitation and absence of ILS and approach lighting systems on some airports in the subregion.

32. Ten of the 16 States own and operate 13 scheduled and 6 non-scheduled carriers, but only three (Air Afrique, Nigeria Airways and Ghanair) are significant international/intra-regional carriers.

33. The 1983 subregional fleet consisted of 112 aircraft, 16 (14%) of which were wide-body, 77 (55%) narrow-body and the rest turbo and piston engines.

A high proportion of the fleet is combi aircraft, suitable for mixed passenger/freight operations due to the generally low volume of traffic (passengers/freight) prevailing in the subregion.

34. There has been substantial growth in both international and domestic traffic of passengers and freight during the decade 1972-1982, while three carriers (Air Afrique, Nigeria Airways and Ghanair) and three airports (Lagos, Abidjan and Dakar) have carried and handled most of the traffic, respectively.

35. Air transport in the subregion suffers from both policy and operational problems. The policy/political problems emanate from the existence of two treaty groups, whose policies are not entirely compartible and the rate at which the two groups have implemented agreements is in the ratio of about 7:4 in favour of the Yaounde group. Protectionist policies by some member states have meant the refusal to grant traffic rights to some subregional carriers with adverse effects on cooperation and promotion of air transport development in the subregion.

36. The operational problems result from the generally poor quality of services relating to some of the following activities: programmed schedules; number of stop-overs; type of craft; flight frequencies; in flight services; facilities; reservation and loss of luggages.

37. In order to improve services, promote development and the harmonization and coordination of air transport in the West African subregion, the following recommendations are made:

- reduce number of subregional international airlines by establishing a subregional airline;
- gradual replacement of expatriate staff;
- ratify African Air Tariff Conference;
- adopt ICAO facilitation procedures at airports;
- subregional consultation on purchase of air navigational equipment,
- establish subregional centre for maintenance of air navigation equipment;
- implement the ICAO African Indian Ocean 6 plan (AFI 6);
- utilise African subregional training centre;
- establish subregional consultation mechanism among civil aviation, airlines, immigration and customs services;
- adopt flexible policy for non-scheduled services;

- establish a subregional freight company;

- use West African Clearing House for exchange of air tickets;

- establish a joint reservation system

- establish pooling purchase system for equipment, spares and fuel;

- liberal granting of traffic rights and unrestricted frequencies to subregional carriers.

38. With respect to the long-term, a change from bilateral to multilateral (subregional) air navigation agreement(s) and the establishment of regional airline(s) was recommended.

Maritime transport

39. In the context of the subregion, maritime transport includes coastal shipping and the West African shipping range extends from Mauritania to Angola (i.e. it covers the Central African subregion).

40. Within the expanded subregion, 16 countries have some 61 shipping enterprises, wholly public, jointly or entirely private, with about 185 vessels (excluding vessels of less than 100 grt), with total capacity of about 1.2 million deadweight tons (DWT).

41. Nigeria alone owns about 40% of the subregion's shipping capacity, but together with Ghana, Cote d'Ivoire, Zaire, Gabon and Cameroon, they own about 91% of the subregional shipping capacity.

42. There are about 65 ports in the 17 maritime states in the expanded subregion, only few of them are regarded as major ports and only Dakar, Abidjan, Lagos, Cotonou and Douala serve as major transit ports in the subregion.

43. The report shows that there are adequate, if not excessive port infrastructure in the subregion - considering that some 65 ports are situated within a distance of 2810 (4500 km) nautical miles from Nouakchott to Matadi. The short distances between ports, numerous numbers of calls by vessels, small volume of goods discharged/loaded, inappropriate layout of some ports and the absence of feeder coastal shipping services have an adverse effect on overall shipping operations and services in the subregion.

44. Among other things, the study examined the links between the ports and inland destinations and concluded that the links had improved substantially and development of containerization was receiving adequate attention in the subregion. However, some improvements were still necessary in the ports, viz: construction of new berths; increasing berth capacity by dredging; new container, Ro/Ro, clinker and mineral berths; expansion of storage/warehouse areas; procurement of new handling equipment; strengthening ship repair yards and improved training.

45. After examining the protection of shippers' interest and the status of maritime legislation in the subregion, the study recommended the following for the improvement of shipping:

- modernization of the fleet,
- close cooperation among the subregional operators;
- establishment of subregional freight broking and consolidating centres;
- establishment of national shippers organization;
- up-dating and harmonizing subregional shipping legislation; and
- establishment of subregional shipping/coastal shipping lines.

Roads and road transport

46. The significant findings about roads and road transport in the West African subregion are that in spite of infrastructural and other defficiencies in this mode, adequate efforts have been made in establishing the legal and other basic frameworks for subregional roads and road transport development and services. This is evidenced by the following activities which have been concluded by ECOWAS:

(i) Harmonization of highway legislation;

(ii) Conclusion of an Inter-State Transport/Transit Convention;

(iii) Establishment of an ECOWAS Motor vehicle Liability Insurance Scheme;

(iv) Continuing efforts to complete the Trans-West African Highway Network as an integrated ECOWAS activity; and

(v) Ongoing studies on establishing a subregional road maintenance training centre.

47. The total road network of the subregion is about 336,016 km in an area of 6.14 million km^2, for an average road density of about 0.055 km/km^2. The primary network is about 67,887 km, secondary network 69,709 km and secondary/unclassified about 201,418 km, which correspond to 20, 20 and 60 per cent, respectively.

48. The road densities in the member states vary inversely to area, but what is of particular importance is the fact that under the provisions of the Inter-State Transport/Transit Convention and the Harmonization of Highway Legislation, all the inter-state highways/roads have not only been designated, but would have uniform rules and regulations.

49. There are over one million vehicles in the subregion, made up as follows: 514,000 light, 150,000 medium, 95,000 heavy, 20,000 truck/trailers and 202,000 others. Only a very small per cent of these are engaged in inter-state operations, due to the fact that most of the countries are litorial and whatever little traffic destined to the three land-locked countries (Mali, Burkina Faso and Niger) is shared between road and railway modes.

50. Annual average daily traffic (AADT) on most of the inter-state roads is very low, although AADT on these same roads near major cities is fairly high. In general, traffic congestion is common in most large urban areas but very rare or non-existent on inter-state highways/roads outside city limits. The analysis shows that if the road infrastructure is improved and properly maintained, full capacity can not be reached or congestion experienced within the next twenty years.

51. With regards to road transport costs and charges, no reasonable data is available for inter-state operations due to the little scale of such operations and the fact that road haulage to the land-locked countries is usually carried out as an extension of railway services. Where data was available, an economic analysis indicated that road charges ranged from 18 to 70 per cent above vehicle operating costs on paved and gravel roads, respectively.

Railways and rail transport

52. The subregional importance of railways in West Africa is limited to the Senegal-Mali, Abidjan-Niger (RAN) and Benin-Niger (OCBN), in that the first two provide through railway services to Mali and Niger while the last one provides a multimodal rail/road service to Niger. The other railways in the subregion (Guinea, Togo, Ghana, and Nigeria) are basically national networks which carter mostly for the individual national traffic.

53. The Togolese network consists of a short 486 km line, 14 locomotives and some 387 rolling stock and handles about 2.5 million passengers and 200,000 tons of freight per year.

54. The Abidjan/Niger (RAN) network is about 1,243 km with some 111 locos, tractors and railcars and 1764 wagons of various description. It handles about 3 million passengers and 600,000 tons per year, some of which is destined for Burkina FAso.

55. The Nigerian Railway Corporation has 3523 km of main line with 4846 km of track. It has 337 locomotives, 805 passenger coaches and 7238 freight wagons. The railway handles about 2.2 million passengers and 1.7 million tons per year (declined to only 550,000 tons in 1982).

Inland water transport

56. This mode is of little subregional significance, since it is used only nationally in a few countries viz: Nigeria, Mali, Niger, Gambia and Senegal and carries very little traffic.

Conclusions

57. An overall review of the West African subregion shows that in spite of the low scale of inter-state operations, all the basic policy and legal instruments for roads and road transport have been established and that this mode offers the greatest potential not only for subregional harmonization and coordination, but for integration and development, given its inherent characteristics of flexibility, competitiveness, small capital requirements and individual and/or small to medium size enterprises.

58. The improvement and maintenance of inter-state road infrastructures have been fully recognized as warranting subregional attention, collaboration and assistance.

59. With respect to maritime/ports, while the expanded subregional fleet is relatively small and port productivity is low, the subregion is adequately, if not excessively supplied with ports and shipping capacity by several conference lines, national shipping companies and cabotage. There is need for harmonization of shipping legislation and consolidation of freight at the subregional level, modernization of fleet and closer cooperation including the establishment of subregional shipping/coastal shipping lines.

60. With regards to air transport, there are a sufficient number of modern airports and a few subregional carriers with old but serviceable aircrafts. There is adequate supply and plans for the augmentation of supply in terms of new aircraft and improvement of infrastructure would improve services and increase supply. However, demand is relatively low and in order to achieve reasonable load factors, frequencies are few. Harmonization and coordination of services, joint operating, purchasing and maintenance arrangements and the ultimate establishment of subregional airline(s), would substantially improve air transport services in the subregion.

61. The railways of subregional significance are the Senegal/Mali, Abidjan/Niger (RAN) and Benin/Niger (OCBN), as they provide services to their land-locked neighbouring states. Planned maintenance/rehabilitation activities could minimally increase capacity, but no double tracking is foreseen in the near future, due to high costs and no excessive demand.

62. In some cases, railways and roads can either be complementary (Cotonou-Parakou rail and Parakou-Niamey/Ouagadougou road) or competitive (Abidjan-Ouagadougou rail and road), thus excess demand on one mode could be taken up by the other mode on the one hand and reasonable charges can be maintained on the other hand.

63. The report concludes that there are several unresolved basic and critical transport problems for the operation of a harmonized, coordinated and efficient subregional transport system by pointing out the following:

- the existence of gaps and missing links in the inter-state road network, unorganized/undeveloped road transport operations, and the small volume of traffic and number of vehicles engaged in inter-state operations;

- relatively small shipping fleet compared to subregional traffic, excess supply by foreign Conference Lines and cabotage, and infrequent calls at the many small ports in the subregion;

- lack of harmonization/coordination of air transport services which result in few frequencies and high fares; and

- poor alignment and inadequate maintenance/rehabilitation of railway tracks with consequent low capacities.

64. The following conclusions are made in the report:

(i) The ECOWAS Summit has recently decided to fully implement clause 2(26) of its Charter dealing with the free movement of persons and goods and to put into effect as soon as possible a single customs frontier for the entire subregion.

(ii) The ECOWAS has concluded and the Heads of State and Government have approved a harmonized Highway Legislation, the implementation and enforcement of which has not yet been effected by member States.

(iii) An ECOWAS Inter-State Road Transport Convention was adopted in 1982.

(iv) An ECOWAS Motor Vehicle Liability Card was adopted in 1982.

(v) Studies on the Trans-West African Highway network have been completed and sections of the network are under construction and the ECOWAS secretariat and ECOWAS Fund have estimated the engineering costs of the remaining unfunded sections.

(vi) Studies for the establishment of a subregional multinational coastal shipping company have been completed.

(vii) Studies for the establishment of a multinational airline in the subregion have also been completed; and

(viii) Studies for the establishment of a regional training centre for road maintenance have been completed.

65. Given the fact that ECOWAS has already done much and has ongoing activities and plans to consolidate and improve transport in the subregion it is recommended that:

(a) The ECOWAS secretariat and other organs should ensure the immediate implementation of the decision for the free movement of persons and goods of the Heads of State and Government, so as to realize the supressed and generated traffic for the subregion's transport services;

(b) The ECOWAS secretariat and policy bodies should urge member States to put into effect and enforce the approved harmonized Highway Legislation;

(c) The ECOWAS secretariat should urgently carry out a detailed study on inter-state road transport costs and other relevant aspects pertaining to the effective operation of the Inter-State Road Transport Convention; and

(d) The ECOWAS authorities should be urged to make firm decisions on the establishment of the multinational coastal shipping company and the subregional airlines company, assuming that the studies did indicate their feasibility.

North Africa 2/

Socio-Economic Background

66. The North African subregion consists of six countries: Algeria, Morocco, Tunisia, Egypt, Libya and Sudan which were classified as Lower Middle Income Economies in 1982 by the World Bank, with per capita GNP of US$410-1650. The GNP per capita varied from US$870 for Morocco to $1390 for Tunisia to a low of US$440 for Sudan. Egypt is considered as a Lower Middle Income Oil Exporting country with GNP per capita of US$690 while Algeria is an Upper Middle Income Oil Exporter with GNP per capita of US$2,350. Libya is a High Income Oil Exporter with GNP per capita of US$8,510.

67. North Africa is characterized by high levels of both population growth and urbanization, despite the fact that people are spread over vast areas of habitable and non-habitable land.

68. Of the six North African states, four are geographically very large (Algeria, Libya, Egypt and Sudan; while Morocco and Tunisia are comparatively small, but relatively large when compared with other small African States (Swaziland, Burundi, Rwanda, etc.).

69. The North African States, except Sudan are highly urbanized, with urban areas accounting for between 42% and 58% of total population and growing at fairly high rates.

2/ See document E/ECA/TRANS/46

70. About 49% to 57% of the total population is in the labour age group (15-64) and growing at 2.5% to 3.6% per year with projections of even higher growth rates of up to 4.4% p.a. during the next decade.

71. Historical evidence elsewhere shows that vast land areas, high incomes, combined with higher younger populations as in North Africa result in higher demand for social and economic interaction and increasing demand for transport services.

72. In comparative terms, the least wealthy North African state in much wealthier than many other African countries and by classification, all the North African countries are in the middle/higher income bracket.

73. In spite of the fact that a large proportion of the subregion's area is desert, all the countries are basically agricultural economies - largely because of the Nile basin (Egypt and Sudan), the hospitable and fertile Mediterranian soil coupled with irrigated desert areas. Unlike other African countries, the North African States devote a substantially small proportion (25 - 35%) of their labour force in agriculture, compared to 60 - 90% in other African countries, and a larger portion (65 - 81%) in the industrial and service sectors (except Egypt (50%), Morocco (52%) and Sudan (80%) of labour force in agriculture).

74. Trade among the countries of the North African subregion is insignificant, amounting to less than 1% of their total trade and a similar situation applies to the rest of Africa. Western Europe is by far and large the major trading partners of North Africa, accounting for about 59% of total imports. As a result, North Africa's well developed transport infrastructures and services are oriented to serving their international trade with Europe.

75. A preliminary look at the future shows that externally oriented trade and transport in North Africa will continue to grow at a moderate to high rate; efforts to increase tourism will continue to receive attention in Morocco, Tunisia, Egypt and Sudan; trade with other Arab states will accelerate; trade with the rest of Africa may receive some attention but not necessarily on an a priori basis; trade and transport links among countries of the subregion will continue to fluctuate due to unresolved tension; and a reasonable rate of trade and transport growth could be achieved in North Africa without any reorientation of current direction of trade and transport in favour of the African region as being advocated by the ECA.

The transport sector

76. The transport and communications sectors play a vital and indispensable role in the economy of the subregion and contributed between 4.5 to 7.7% of GDP in 1983.

77. Algeria and Libya have well developed, maintained and high standard transport networks. In general, the provision of adequate transport infrastructure is a basic objective in national planning/development of the two countries and has been adequately supported with resources. Algeria has a railway network of 3900 km which carried 2 billion passenger-km and 2.5 billion ton-km freight in 1982. Seaborne freight increased from 54 million tons in 1973 to 58 million in 1983. Air traffic grew steadily from 1 million passengers/10,000 tons freight in 1973 to 7 million/11,000 tons freight by 1983.

78. Morocco and Tunisia also have extensive high quality transport networks. Transport sector amounts to 4%-5% of the total GDP. In Morocco, the GDP, attributable to the transport sector, has been increasing at a rate consistent with the increase in the GDP itself. This has been achieved in spite of the economic difficulties induced by the world recessionary context of the past three years. Morocco has 10,500 km of paved primary highways and there were 700,000 motor vehicles in 1983. In 1982, 10.5 million tonnes of freight was carried by road transport. The railway network consisted of 1800 km in length and carried 7.5 million passengers and 25.5 million tonne of freight in 1983. Seaborne shipping has increased steadily from 25 million tonnes in 1973 to 32 million tonnes in 1983. Two major port complexes at Jorf Lasfar and Nador were under construction and a third at Agadir was planned for 1985/86. Air traffic has also increased steadily from 1.4 million in 1973 to 2.7 million in 1983. Nearly 400,000 international tourists visit Morocco each year.

79. Inflation in Tunisia has been less prevalent than in other North African states and the contribution of the transport sector has been steady at 4.6% in 1981 to 5.1% in 1983. The Tunisia railway network is 2200 km long and its 1983 traffic showed a performance of 804 million passenger-km and 1.9 billion tonne-km of freight. There were 300,000 motor vehicles and 10,800 km of paved principal highways in Tunisia in 1983. Seaborne shipping increased from 9.2 million tonnes in 1973 to 13.7 million tonnes in 1983. Air passenger traffic increased from 1.7 million in 1973 to 3.3 million in 1983 and air freight from 7,400 million tonnes to 16,400 million tonnes. Tourism has shown a significant increase during the last decade from 765,000 in 1973 to 1.5 million in 1983.

80. Egypt and Sudan, like Algeria, are two large countries requiring vast investments in transport. In Egypt, the transport sector's contribution to the GDP at current prices has been a steady 6% of the total. This grew at an average annual rate of 7% in the seventies. The petroleum sector, its export capacity and its recent growth of 14% during 1982-1984, has given a major boost to the economy. Transport services continue to expand with value added rising over 6% annually in recent years. All modes of transport have contributed to this impressive performance. Railway passenger and freight traffic increased by 15.9% and 8.7% during 1983-1984, and 6.2% and 3.2% respectively in case of roads. River transport services increased 5.1% during the same period. The transport component of the GDP has shown a steady growth of 6.5% during 1982-1984 discounting for inflation (at 1982 constant prices).

81. The Egyptian railway network totals 4400 km. Railway traffic has grown from 6.3 billion passenger-km and 2.5 billion tonne-km in 1973 to 12.5 billion passenger-km and 2.7 billion tonne-km in 1983. Egypt has 14,100 km of paved principal highways and 825,000 motor vehicles. Road traffic in 1984 was at 52 billion passenger-km and 13.2 billion tonne-km of freight. Seaborne shipping has grown from 21.3 million tonnes in 1973 to 44.0 million tonnes in 1983 (including Suez Canal Authority volumes). Air traffic has grown at a very high rate from 1.8 million passengers and 22,000 tonnes of freight in 1973 to 15.2 million passengers and 91,300 tonnes of freight in 1983. The number of international tourists has increased significantly from 535,000 in 1973 to 1.4 million in 1983.

82. Public sector investment in transport infrastructure in the Sudan has been declining steadily since 1982. The contribution of the transport sector to the GDP which was 11.8% in 1981 has declined to 7.7% in 1983. Inflation rates have also been very high with almost 50% rise in the consumer price index during 1981-1983. There exists now a near state of crisis in the transport sector, particularly railways, requiring vast additional investments. Sudan Railways Corporation and the River Transport Corporation are now facing serious financial shortfalls after nearly five years of neglect. Freight and passenger tariffs have increased dramatically on both systems recently, averaging about 35% (30% for sugar, 166% for gas, oil and petroleum products).

83. Sudan Railway network consists of 4800 km of track. Passenger traffic which grew from 1.0 billion passenger-km in 1973 to 1.2 billion passenger - km in 1980 has since declined to only 629,000 in 1983. Similarly, freight carried by the railways has declined from 2.6 billion tonne-km in 1973 to 1.6 billion tonne-km in 1983. Seaborne shipping has grown steadily from 3.1 million tonnes in 1973 to 4.3 million tonnes in 1983. Freight carried on river transport has increased from 74.0 million tonne-km in 1974 to 113.2 million tonne-km in 1932, altnough the number of passengers has declined from 102,000 in 1974 to 66,000 in 1982

Roads and Road Transport

84. The road network in North Africa largely consists of unintegrated, scattered and fragmented national earth roads of various geometric standards, only few of which provide interstate connections. The infrastructure is generally inadequate and maintenance of both paved and unpaved roads is poor and irregular, with the result that road conditions are generally poor. While the lack of trained personnel, equipment and financial resources account for the condition of infrastructure, non-physical barriers in the form of restrictions on interstate links, degrade and limit road transport services in the subregion.

85. With the exception of the highway from Morocco to Egypt along the Mediterranean sea, which links five of the countries and is of a higher standard and well maintained, there are few other inter-state link roads and the general tendency of most national highways is in the North-South direction. The historical development of transport in the subregion has been towards Europe across the Mediterranean with only recent efforts towards

Western Asia via the Ahmed Hamdy Tunnel at the Suez Cannal. Another recent development aimed at linking Europe by road is through the proposed fixed link at Gibraltar designed to link Morocco and Spain.

86. Six of the Trans-African Highways either originate/terminate or traverse the subregion, namely:

- Rabat - Cairo North African Highway
  Tangiers - Lagos Trans-Sahara Highway
- Tripoli - Windhock Trans-Central Highway
  Cairo - Gaborone Trans-East African Highway,
  Dakar - Djibouti Trans-Sahelien Highway.

87. Despite the poor state of national roads in the subregion, the North african roads are comparatively better than roads in other African subreginos, partly as a result of topography, weather and climate.

88. It is estimated that there are about 4,167 km of main road links along the various Trans-African highways in North Africa. There is a total of about 220,000 km of roads in the 9.75 million km^2 area, giving a road density of about 0.02 km/km^2. Vehicular density in the subregion range from a km of 2.1 (Libya) to a high of 43.5 (Tunisia) vehicles per 1000 population.

89. Road design standards differ from country to country in the subregion but are mainly of French or American origins. There is therefore an urgent need to standardize design not only in the subregion but in the region as a whole, given the initiation of the Trans-African highways network which are continental in scope.

90. There remain several missing links on the several (Trans-African highways in the subregion in Morocco (909 km), Algeria (820 km), Egypt (100 km), and Sudan (3,295 km) - all of which attest to the few inter-state road links in the subregion.

Air Transport

91. The non-existence of any subregional or regional air transport policy in Africa, coupled with the divergent views held concerning the role of air transportation, is partly accountable for the disorganized and unco-ordinated development of this sector in the North African subregion. The plathora of legislations and regulations in the subregion has only led to the reinforcement of this trend, namely the development of virtually independent air transport systems and further highlighted the effects already mentioned above.

92. The low level of economic, trade and tourism relations within the subregion is the main contributing factor to the stagnation and low volume of intra-subregional traffic (passenger and goods). The continued existence of artificial barriers resulting from the deterioration in inter-State relations and the widespread non-application of Appendix 9 of the Chicago

Convention on Facilitation, are also problems which hamper the development of air transport services in the subregion. Despite the fact that countries within the subregion endorse the various recommendations made by AFRAA and AFCAC, particularly those relating to the mutual granting of 5th Freedom rights, these agreements are still not fully implemented.

93. The lack of co-ordination between air and land transport modes even within individual countries hampers the sound and smooth development of an efficient overall transport system. In some countries the lack of co-ordination among the various sectors which is meant to serve air transport (Transportation, Finance, Tourism) reduces its effectiveness. In some countries, the non-convertability of the local currency coupled with rigid regulations on the importation of spare parts, are all deterrents to the smooth functioning of airlines.

94. Despite the fact that all bilateral air transport agreements contain appropriate clauses pertaining to the transfer of surplus incomes by airlines, there are still some problems in this area, within the North African subregion.

95. The centralized organization of airports in some countries, considerably reduces the local airport management authority's scope to manoeuvre and consequently has adverse effects on airport management, especially domestic airports.

96. The aeronautic and meteorological training facilities within the subregion are grossly underutilized, since there is a tendency of each nation establishing its own facilities whereas joint subregional facilities can effectively and efficiently serve the needs of the subregion.

97. The North African subregion has more than a hundred airports, out of which forty operate international services. Present conditions in these airports are excellent, because the countries have made heavy investments during the last decade to improve them. More than 20 of these airports have runways which are more than 3,000 m long.

98. The subregion however still has to contend with some difficulties in the telecommunications circuits, namely: Cairo-Khartoum; Cairo-Tripoli; Jeddah-Khartoum; and Khartoum-Nairobi.

99. Air transport control in the subregion is still regulated by conventional methods, although the air control centres carry heavy traffic. There is a definite need for computerization of control methods as well as a decentralization of centres.

100. Calibration and inspection of flight equipment is still carried out by foreign companies, except in Algeria. Financial difficulties facing coutnries in the subregion, coupled with the subsequent international economic crisis, are serious constraints to the development of air transport in some countries. Consequently, projects relating to the construction of aeronautic infrastructure as well as the purchasing of equipment and machinery have been cancelled or postponed.

101. Some airport terminals have reached their saturation point in the handling of passengers and luggage, and/or do not have adequate facilities and equipment for handling and warehousing freight (particularly perishable commodities). On the other hand some airports have deteriorated through lack of adequate maintenance. Fuel shortages and absence of lighting facilities are also major setbacks to air transport services in the subregion. In some cases, scheduled air service circuits are not reliable and therefore constitute deterrents to the development of civil aviation.

102. Some air traffic Regional Control Centres (RCC) have reached saturation point, on account of the density of air traffic they control and still continue to operate by stereotyped methods. In spite of developments in aerial navigational techniques, permanent training programmes for air traffic controllers are not systematically organized, similarly, there is frequent lose of communications links between controllers and aircrafts and no periodic meetings are held to consider the abnormalities observed in the operations of air traffic.

103. There are practically no meetings, organized at subregional level between air traffic controllers from various coutnries, where they could exchange experiences and discuss their respective difficulties.

104. Subregional facilities for in-flight inspection and calibration of aerial navigational aids are underutilized and the centralized nature of radio maintenance in some countries within the subregion, reduces the efectiveness and efficiency of such maintenance activities.

105. In preparing their seasonal programmes, airlines operating in some countries seldom involve airport management authorities, so that they may consider their own constraints in handling traffic and providing other necessary terminal facilities and services.

106. In 1986, there were twelve national airlines operating in North Africa with a total of 182 aircraft, out of which 138 were jet aircraft. Owing to noise limitation and the application of an ICAO resolution, it will become necessary to replace some of the aircraft. Within the subregion, the maintenance system is relatively well organized because in most cases, it is handled by the airlines themselves, up to a certain level. The overall maintenance of the engines is done in Europe under a pool arrangement which makes it possible to obtain some discount.

107. Besides technical co-operation, airlines co-operate also in areas such as handling and sales. Some pool agreements which existed among North African Airlines, were later discontinued. At the moment, most pool agreements are with European Airlines.

108. The existing air route network in North Africa is not the result of a ration design but the consequence of unco-ordination and the autonomous development plans of various airlines. Similarly, programming flights and co-ordinating timetables are not undertaken within the global framework of providing service in the region, but rather as individual programmes of the various airlines. This has led to:

- fewer and infrequent links with other African subregions, often making it obligatory for passengers to be routed via European capitals;

- infrequent/indirect services to capital cities in the subregion, some of which have never had direct links between them; and

- the non-co-ordination of flights.

109. The non-existence of inta-regional co-operation in marketing, technical matters and operations, completely defeats the objective of optimization of air services.

110. Although there is some co-ordination among certain airlines in the subregion in relation to the negotiation of maintenance contracts with foreign countries, this type of co-ordination is not extended to the entire subregion.

111. Despite the relative homogeneity in the types of equipment, the airlines in the subregion do not all belong to a common pool agreement for the purpose of purchasing space parts.

112. Several pool agreements and joint flights are operated between airline companies in the subregion and several foreign companies, whereas there are no such agreements among airlines in the subregion and almost none with other African companies. Worse still, there are no measures for standardizing aircraft and air crews within the subregion.

113. Generally speaking, airlines have not been able to reduce operating costs, mainly on account of the fact that generalized techniques in modern management such as computerization and analytic accounting procedures, have still not been introduced to the entire service network of airline companies.

114. The productivity level of some national airlines is very low, mainly because they are over-staffed. Furthermore, they do not have any annual fixed targets in co-ordination with civil aviation authorities.

115. Owing to lack of adequate resources, air transport operations by national airlines are very modest and irregular in comparison with operations by foreign airlines. Freight transport is still not fully developed in spite of its potential importance to the sector. Reliable statistics on the airlines economic performance seldom exist; similarly there are no facilities for systematic exchange of air transport statistics within the subregion.

116. The subregion's requirements for processing agricultural commodities are quite substantial, but agricultural aviation is still underdeveloped in the subregion. With regard to economic integration, maximum use is still not being made of national or regional facilities for developing infrastructure, equipment, haulage and handling.

117. Intra-subregional tourism is still not developed, in spite of the great potential the region has to offer.

Maritime/Ports

118. Maritime transport is the oldest and comparatively well developed mode in North Africa. The subregion has about 5 million DWT of shipping capacity - equivalent to about 75 per cent of all African shipping capacity. Algeria and Libya own about 30 per cent of the subregion's shipping capacity. Countries of the subregion are doing fairly well in carrying their respective international trade traffic in their national shipping lines (Morocco, Egypt and Sudan 30 per cent plus).

119. The shipping lines in Egypt, Sudan and Algeria are operating at a profit, while those of Libya, Morocco and Tunisia operate at deficits and depend on subsidies and other support.

120. There is evidence of over-investment in the shipping sector in the subregion. For example, between 1981-1985 Morocco's public and private investment in shipping was about $397.1 million for the acquisition of 29 conventional, 15 bunkers, 2 tankers, 5 specialized and 2 service vessels. This increased capacity/tonnage was not matched by increased traffic, although there is some multinational freight pooling arrangement between some countries of the subregion.

121. There seems to be counter evidence that while some countries of the subregion have excess capacity, others have deficit capacity, yet there is no attempt at subregional harmonization/co-ordination of services and pooling of freight and foreign operators tend to take advantage of the subregion's disarray in shipping. Some of the reasons for lack of or ineffective subregional co-operation are: frequent unpredictable policy changes by some governments; disparities in wealth resulting in different attitudes towards common goals; short-lived bilateral agreements; and insufficient experience in international co-operation and harmonization.

122. Ports are an indispensable complement to shipping and the North African subregion is adequately, if not over provided with ports. There are a total of about 34 ports located on about 6,500 km of coastline on the Red Sea, Suez Canal, Mediterranean Sea and Atlantic Ocean bordering the subregion. As a result of the numerous ports, distances between ports in Morocco, Algeria, Tunisia and Egypt are very short with ominous implications for shipping operations and freight costs.

123. Tunisia with a coastline of about 600 km and 5 major sea ports has the greatest concentration of ports which handled up to 4 million tons in 1983. Algeria has five major ports with a combined capacity of about 80 million tons per year, yet there is a reasonable incidence of port congestion which results in occasional demurrage charges. Libya has only two major ports and in order to reduce congestion resulting from increasing traffic (from 7 to 17 million tons forecast from 1980 to 1985), heavy investments ($6.3 billion) were made in additional port facilities and infrastructure.

124. Egypt has four major international ports and plans to develop two additional ports due to congestion at the existing ones. The overall port development plan of Egypt would provide annual capacity of 65.5 million tons by the year 2000.

125. The Suez Canal is an important aspect of Egyptian maritime transport, as it provides the shortest sea route from East to West and vice versa, earning the country an average of $1,140 million per year - the second largest source of foreign exchange earnings.

126. Sudan has only one port located on the Red Sea, with an annual capacity of about 9 million tons. Due to inland transport problems and substantial traffic increase (drought and famine relief goods), the port has experienced serious congestion and vessels' waiting time averages 15-20 days. Some improvements effected on the port in 1982 are estimated to have increased the throughput to about 5 million tons per year.

Inland Water Transport

127. Only Egypt and Sudan use the River Nile for inland water transport in the subregion. The other North African countries have no inland waters. Traffic on the river is largely national, although there is some traffic exchange between the two countries but operations in each territory are exclusively for each nation.

128. Inland water transport plays a vital but moderate role in the two national economies due to the fact that the river valley provides fertile agricultural areas to both countries.

129. About 2.5 million tons of traffic are carried by inland water transport a year in Egypt and most of it (96 per cent) is destined to locations south of Cairo. In the Sudan, about 154,000 tons are carried per year in addition to about 25,000 tons of international traffic. Sudan's passenger traffic has decreased from 182,000 to 47,000 between 1974 and 1984. Sudan's inland water fleet is estimated at 283 vessels, while that of Egypt is about 367 vessels.

130. There appear to be reasonable port facilities and equipment in both countries, yet there is need for the improvement/modernization of both and an urgent need for the harmonization and co-ordination of operations to enable through inter-State services by vessels from each country.

Multimodal Transport

131. With regard to the harmonization/co-ordination of the various modes of transport in the subregion, this is not especially prominent although most railways and roads inter-face with the ports (i.e. maritime) in each nation. Similarly, most inland railway branch lines run parallel to roads and all or most of the railheads are served by roads.

132. RO/RO services are not only promoted but being reasonably utilized by some countries of the subregion (e.g. Tunisia) and while there is limited scope for intra-subregional use of this, the potential is extremely high and promising for regional use, given the ongoing development of the Trans-African highways through which RO/RO services could be extended to landlocked Sahelian States or to the West African coast.

Railways

133. With the exception of Libya, all the North African countries have railways. The railways in the Maghreb countries (Morocco, Algeria and Tunisia) are in very good condition with regard to track, rolling stock, electrification, passenger services, tariffs and terminals and are jointly governed by the Maghreb Transport Commission and Inter-Maghreb Convention on railway tariffs.

134. The network is a continuous physical system with great potential for efficient and harmonized services among the three countries, except that due to tension between Algeria and Morocco since 1975, traffic between them has decreased to near zero. The traffic between Algeria and Tunisia is extremely small.

135. In 1979, traffic between Algeria and Tunisia was about 33,000 tons per year, then decreased to only 14,000 by 1983 and rose again to 20,000 tons by 1984 (i.e. still 30 per cent below the 1979 level). Algerian traffic to Tunisia was only 560 tons in 1979 but has steadily increased to about 3,300 tons in 1983.

136. The total passenger traffic between Algeria and Tunisia was 16,000 in 1976, 239,000 in 1979, 526,000 in 1980, but decreased to 137,000 in 1982 and to only 97,000 in 1983 and slightly increased to 171,000 by 1984.

137. There is no direct railway connection between Sudan and Egypt, due to the 450 km Lake Nassa, created by the Aswan High Dam.

138. The railway network in Sudan although well developed, has not been adequately maintained over the past decade with the result that operations and efficiency have suffered.

Africa-Europe Fixed Link at Gibraltar

139. The proposed fixed link across the Straits of Gibraltar is not by itself a transport mode but if realized could completely revolutionize the traditional links between Africa and Europe. Basically, the concept is either a tunnel, tube or bridge which will directly link Morocco with Spain and enable vehicles from either direction to cross.

140. The advantage of this link is that besides sea and air, it would be possible for trucks to drive from Europe into North Africa and thence to the landlocked Sahelian and West African countries. Preliminary studies by ECA and ECE indicate that this could be the faster and perhaps cheaper transport route for the landlocked and parts of some other countries in West Africa. The zone of influence of the link includes all of North and West Africa, while tourism by automobile and trucking would be the major beneficiaries.

141. Current traffic estimates indicate that about 8.8 to 12.6 million passengers, 4 to 6 million tons of goods and 1.3 to 2.1 million vehicles could use the fixed link by the year 2000 - provided adequate facilitation and the removal of all non-physical barriers were effected.

Summary and conclusion

142. Some selected highlights of the summary and conclusion of the North African subregion are that, as a group except Sudan, the North African countries enjoy and will continue to enjoy a higher standard of living than most African countries. Their structure of trade and transport has been and is likely to remain outward oriented to Europe and Western Asia.

143. The road network in the subregion is relatively better than that in other subregions and the Trans-African highway along the Mediterranean is virtually complete and in excellent condition but inter-State travel on it is hampered by lack of co-operation, facilitation and political tension between some member States. In view of the subregion's strategic location and the origin/destination of most of the Trans-African highways there, the subregion stands in a position to play a major role in the harmonization/co-ordination of road transport in Africa.

144. With regard to maritime/ports, the subregion has adequate, if not excess capacity in both, but due to lack of co-operation, there appear to be deficiencies and excess demand in some countries. With some 21 major international and over 50 minor ports, the subregion is adequately supplied with ports but poor management, inadequate maintenance and obsolete handling equipment still result in port congestion.

145. The report suggests that system efficiency can be achieved through strong emphasis on transport harmonization/co-ordination and specific studies on:

(i) extent and reasons of non-physical barriers;

(ii) simplification of rules, procedures, regulations and protocols applicable to transport;

(iii) economic costs and benefits of the various modes;

(iv) suitability of some modes to specific traffic;

(v) ways and means of a balance between the various modes; and

(vi) rationale of subsidies to only some modes.

Eastern and Southern African Subregion 3/

General Economic Background

146. The Eastern/Southern African subregion covers a vast expanse of land about 8,176,380 km^2, stretching from as far south as Lesotho to as far north as Ethiopia and Somalia or "the Horn of Africa". Although the subregion covers a large land area, the population is very low. The total population is only 146.3 million (1983), translating into a population density of only 17.8 persons per km^2. The average population growth rate is estimated at about 3.1 per cent per year. Over three quarters of the subregion's population live in the rural areas and the level of urbanization is very low. Only Djibouti, Zambia and Somalia have a third of their respective populations in urban areas. The subregion is predominently agricultural. Seventy-two per cent of the countries are dependent on agriculture for their livelihood, employment and export earnings.

147. In economic terms, the subregion is relatively small. Total GDP amounted to $17.1 billion in 1983 and the economic growth was a marginal average of 1.85 per cent per year over the period 1979-83. Average GDP per capita was about $118. Agriculture contributes over a third of the GDP for half the countries, with the exceptions of Zambia, which is dependent on mining and Madagascar, Mauritius and Seychelles whose economic mainstay is tourism and Djibouti, which depends on transit transport services for employment and foreign exchange earnings. Another significant feature of the economies of the subregion is that they are predominantly subsistent. Only 3 per cent of the total population is in formal sector employment, the rest being engaged either in the informal sector or subsisting in the rural areas. A further distinguishing feature is that almost all the economies depend on a few primary commodities mainly, agricultural crops, for their foreign exchange earnings. There is little diversification of the economies and this makes them vulnerable to the vagaries of international commodity markets.

148. Almost three quarters of the economies of the subregion are dependent on agriculture. Subregional economic activities revolve around the production, semi-processing and export of primary agricultural commodities. Apart from export earnings, agriculture is also important for employment and subsistence. Although the subregion has vast agricultural potential, reflected in its abundant and fertile land, rivers and lakes for irrigation and a favourable climate which can nurture most crops, fruits and vegetables, the levels of agricultural production are very low. Less than one-third of the total cultivable land is currently under cultivation and most countries have deficiencies in basic food supplies.

3/ See document E/ECA/TRANS/44.

149. The prospects for increased agricultural output both for export and local consumption are vast. Presently, increased agricultural production is hampered by inefficient production methods, poor soil conservation and utilization and inadequate resources being channelled into agriculture. These inadequacies are further compounded by poor organizational and institutional support to the agricultural sector in such aspects as marketing and distribution of both inputs and outputs, pricing, extension and other related services. However, most Governments have identified and accepted these deficiencies and are taking positive measures to correct or eliminate them.

150. Over the past years, drought was a serious threat to most countries of the subregion and even now, some have not yet fully recovered from its adverse effects. The situation has however improved and most countries are now experiencing their normal climatic conditions. Therefore, with these developments, and in view of the fact that only a small proportion of potential agricultural land is being cultivated, and with the subregion's favourable climatic conditions, agricultural production of both export and food crops is certain to increase.

151. Increased agricultural production is likely to lead to self-sufficiency in food thus, diverting resources, enormous amounts of which are currently being spent on food imports, to other vital economic sectors. Agro-processing industries would expand, generating employment and raising incomes. Rural incomes would rise and this would in turn lead to ripple effects on other sectors of the economies, increased agricultural production and the subsequent ramifications would generate demand for transport services and for movement of goods and passengers.

Manufacturing

152. The importance of manufacturing to the subregion is limited. Manufacturing is not a dominant sector in any of the economies, either in terms of employment or export earnings. Only about 40 per cent of the countries derive 10 per cent or more of their GDP from manufacturing. For almost all the economies of the subregion, manufacturing is based on agro- and food processing. The other major industries which are almost uniform for the subregion are: textiles, leather and shoes, brewing, milling and printing. Thus, the predominant feature of manufacturing is semi-processing of agricultural products and food.

153. The full development and expansion of the manufacturing sector is constrained by: limited domestic markets as a result of relatively small populations and low incomes; similarity of the industrial manufacturing base resulting in little prospects for intra-subregional trade for both finished goods and inputs; non-existence of capital goods industries for production of equipment and spare parts needed for the manufacturing sector. This leads to a heavy dependence on imported equipment and inputs, despite growing foreign exchange problems.

154. The present levels of output are far below the installed capacities of the manufacturing enterprises in the subregion. Most of the industries are operating at less than 50 per cent of their rated capacities, mainly as a result of foreign exchange problems and the inability to procure replacement equipment, spares and inputs, but also because of inappropriate industrial development policies and strategies, difficulty in raising investment funds and weak management. Although the short-term prospects for expanded manufacturing production are less optimistic than for agriculture, because of the uniform industrial structures, low population and incomes and foreign exchange problems, nevertheless expansion of manufacturing output to present installed capacity is bound to generate demand for transport in the long term.

155. Mining is relatively undeveloped in the subregion and only one country, Zambia, is wholly dependent on mining for export earnings and wage employment. Over 95 per cent of Zambia's export earnings are from minerals, especially copper. The undeveloped nature of the mining sector is not a result of lack of a mineral base, but is a logical consequence of the pattern of exploitation of the colonies pursued by the formal colonial powers. Mineral exploitation occurred only in those countries where mineral resources were clearly abundant and easy to extract. With the advent of independence, most governments were too pre-occupied with raising the standards of living of their population to risk their vital and scarce resources on mineral exploration. It is only in the face of economic difficulties and the search for economic diversification that most governments with the assistance or in co-operation with large corporations from the developed countries, have embarked on intensified mineral exploration. It is generally acknowledged that the subregion has one of the highest concentrations of mineral resources in the world in terms of diversity, quantity and quality. The mineral base of the subregion is rich.

156. In terms of volumes and values, mineral production is the single most important economic activity that is bound to have a significant impact on the economy of the subregion and a major influence in transport demand in the long term. The region has a vast and abundant mineral base whose exploitation has hardly commenced. It is also well known that mineral production such as exploitation of all and other strategic minerals can transform the economy of a country in the very short term.

157. Although accurate projections are difficult without a detailed study, it is evident that the pattern and development of the transport sector will depend on developments in the mining sector. Given the current levels of exploitation activities, there is every indication that the mining sector will increase in importance in the economies of the subregion, thus will demand for transport.

Tourism

158. Of all economic sectors, tourism development is characterized by controversy. Those against tourism point to the destruction and commercialization of natural resources, the high foreign exchange inputs into the industry and the cultural "erosion" that inevitably comes from influence of foreigners. Proponents enumerate the educational and cultural exchange/enrichment value of tourism, foreign exchange earnings and employment generation and the international cohesion arising from tourism.

159. Four economies in the subregion: Comoros, Madagascar, Mauritius and Seychelles depend on tourism as the major source of foreign exchange earnings and employment and Kenya also depends to a large extent on the tourism sector. Almost all countries have intentions to promote, or are promoting tourism development. This is reflected in that all countries have a tourism promotion body which is engaged in some form of tourism development.

160. The tourism potential at the subregional level is unquestionable. Tourism attractions include: unspoilt game parks, waterfalls, beaches, abundant wildlife, exotic climate and other scenic and natural attractions. Apart from Kenya and the island countries, which have well developed tourism industries, tourism development in other countries is constrained by: inadequate infrastructure in terms of accommodation, transport and lack of travel facilities.

161. Indiginous subregional tourism traffic is curbed by limited prospects for personal travel due to low incomes and foreign exchange restrictions and cultural values which inhibit international travel. Almost all countries in the subregion have foreign currency restrictions and only about a third of the countries permit purchase of foreign currency for personal travel. Most countries in the subregion are linked by air and there is very little intra-subregional passenger movement either by road or rail.

162. The subregion has a large and hitherto unexploited tourism potential. The development and growth of the tourism industry will, however, depend on clearly established subregional tourism policies supported by the necessary infrastructure and services. Improvements in the foreign exchange positions of most countries coupled with easier facilitation practices would result in considerable growth in tourism traffic.

Trade Pattern

163. Trading patterns of the subregion closely follow the former colonial links, with the exception of America, which is receiving a substantive share of the subregion's trade. The destination of the bulk of exports, in value terms, is Europe including United Kingdom as well as America and Japan. Generally, the number of trading partners per country is limited to a few countries and there is little diversification. Imports closely follow the pattern of exports, with Europe, America and Japan dominating, followed by China and India. Import and export trade with centrally planned economies is very low and is limited in the subregion, which has no strong historical ties with the Eastern block.

164. A characteristic feature of the trading patterns of the subregion is that it has always been in trade deficit. In 1982, the deficit on the trade balance for 80 per cent of the economies was about $3.2 billion and generally over the years, the subregion has maintained this deficit level. The perpetual trade deficit is a result of the worsening terms of trade between the subregion and its major trading partners. This again is a result of rising import costs and declining export earnings. Falling export receipts are a result of the subregion's dependence on primary export commodities, whose prices are beyond

the subregion's control. Falling export receipts in turn lead to less foreign exchange earnings and therefore to a diminished capability for purchasing new materials and inputs required for productive sectors. This leads to low productive capacity and shortfalls in supply which need to be remedied by imports, but these are also limited by foreign exchange constraints. The subregion's economy is therefore in an economic vicious circle, out of which it cannot easily escape.

165. Inter-subregional trade, that is, trade with other African subregions, is very limited. Intra-subregional trade, that is, trade amongst the countries of the subregion, is even more limited. In 1982, total intra-subregional trade amounted to only $225.8 million, out of which 29 per cent were subregional imports. Factors which limit the scope of intra-subregional trade are: similar economic structure, uniform industrial structures, and the existing outward-oriented trade relationships. Liquidity problems and restrictive policies, such as protectionist polices without due consideration of subregional comparative cost advantages are other limiting factors in subregional trade.

166. There is growing awareness in the subregion of the limitations imposed on trade by the problems outlined above. In response to this situation, Governments of the subregion have taken measures to remedy this unfavourable situation. One of the most significant of such measures was the establishment of the Preferential Trade Area for Eastern and Southern Africa (PTA). The PTA aims primarily at promoting intra-subregional trade by removing physical and non-physical barriers to trade and by easing payments problems through the establishment of a subregional Clearing House. The Southern African Development Co-ordination Conference (SADCC), which groups half of the countries of the subregion, is also an organ that is promoting intra-subregional trade. The SADCC strategy is to reduce external dependence and to remove constraints on trade by enhancing facilitation. When the objective initiated by these two subregional institutions shall be fully implemented, intra-subregional trade should be able to expand much more than the current levels.

Air Transport

167. The Eastern and Southern Africa subregion has 31 international airports with Addis Ababa, Nairobi and Dar es Salaam as principal hubs. Intra-subregionally, the international airports of the subregion are linked 147 times for about 74 city pair connections with 382 frequencies per week. This means that each international airport is linked on the average to 6.4 cities in the subregion and has 16.6 weekly frequencies. Intra-subregionally, the international airports of the subregion are linked 62 times with 218 frequencies weekly with cities in the other subregions of Africa.

168. The international airports of the Eastern and Southern African subregion are linked 618 times to cities in Europe, 260 times to cities in the Americas with hubs in Europe, 108 times to cities in Asia, Middle East and other countries. In total, the subregion has 1,215 international links of which 229 (19 per cent) are within Africa, 986 (81 per cent) are outside the region.

169. Basically, 16 cities in the subregion are still not directly linked to any major international points, giving rise to 184 non-existent but potential city pair connections. In consequence, the present network (147 links) accounts for only 44.4 per cent and potentially the subregion could develop the remaining 55.6 per cent additional links.

170. There are 52 countries on the African continent with 1,326 potential country-pair links, of which 391 are between the principal subregional airports in the rest of Africa, which represents 30 per cent (391/1326) of the potential country-pair connections.

171. However, only 82 links are currently utilized, showing a marginal utilization of only 21 per cent (82/391). The international connection of the subregion has the most promising potential of 668 links, mainly because of the high prospects of route expansion in the Asia, Pacific, Middle East and American regions.

Infrastructure and Equipment

172. Eighteen international airports are currently served by wide-body aircraft. Ten secondary airports and 3 principal airports (Maseru-Lesotho, Manzini-Swaziland and Gaborone-Botswana) are not served by wide-body aircraft. The facilities at most airports are still below modern standards and cannot adequately handle the increasing traffic of the subregion as a whole. Some airports have good runways but inadequate terminal and storage facilities and general handling equipment. There are several projects in the subregion for new airports (Metsapha, Maseru), new terminals (Harare, Ndola), new hangar (Lusaka) and new equipment acquisition (Ndola, Lusaka, Livingstone, Maputo, Beira).

173. In 1986 the subregion had 281 aircraft, 58 of which were jets (21 per cent) and 57 were turbo-props. Five countries own wide body jets while two others lease them.

174. Air transport infrastructure and equipment in the subregion can be divided into three distinct classes or categories in a descending order, whereby Kenya, Ethiopia and Tanzania are first; Zambia, Zimbabwe, Mauritius and Madagascar second; and the rest of the countries third. The subregion has the facilities and capability of carrying out all maintenance, except engine overhaul.

175. In 1983, traffic handled in the subregion was about 1.6 million passengers and 49,309 tonnes of freight. Intra-regional traffic was about 694,319 passengers with the most traffic to/from Kenya, Zimbabwe, Mauritius and Reunion.

176. Due to foreign exchange restrictions in most of the countries, airline revenues cannot be repatriated from some countries of the subregion, thus exposing the airlines to greater risks in defaulting on debt-servicing and loss due to local inflation or devaluation.

177. The absence or low attention given to facilitation at major international airports in the subregion gives cause for concern due to the fact that this tends to limit the capacity of the terminals and is contrary to the established provisions of ICAO's Annex 9.

Inland water transport

178. The Eastern/Southern African subregion is amply supplied with inland bodies of water (rivers and lakes), several of which play a role, though minimal, in national and international transport. The main characteristic of this mode is that while its role is generally acknowledged, major efforts and attention have not been given to its proper development, except in the landlocked countries such as Uganda, Burundi and Malawi, and in some seabased States such as Kenya and Tanzania, who largely or partly depend on it for inter-State, transit or internal transport as the case may be.

179. Some of the important lakes and rivers currently used for inland water transport include but are not limited to the following: Lakes - Victoria, Tanganyika, Malawi and River Zambezi. With the exception of Lake Malawi, all the above are shared and used by more than one country.

180. Among the factors adversely affecting effective and efficient utilization of this mode either for national or inter-state transport are seasonal variations in the waterway course, winding routes with sharp curves, instability of river beds, draught restrictions and natural rapids/waterfalls. The inadequacy of infrastructures, equipment and the poor management/operations generally prevailing in the mode further limits its potential.

181. Containers have added yet another important element to inland water transport, in that they are suitable and easily adapted to this mode and enable inland delivery/despatch of fully containerized goods with the added benefits of security, speed, safety and reduced overall transport costs. In the case of the subregion, this requires investment in appropriate infrastructure and equipment.

182. Due to its very nature, the future prospects of developing harmonized and co-ordinated inland waters transport infrastructures and services in the subregion will largely depend on the national, bilateral and multilateral arrangements which countries having or sharing inland water shall make between/among themselves, rather than to an all encompassing subregional policy on the mode.

Maritime transport

183. The peculiar thing about shipping in the subregion is the near absence of participation by the few national shipping lines in the carriage of the large volume of its inter-national traffic, in spite of the fact that about 90 per cent of the subregional internation trade traffic is carried by sea and there is substantial and growing bulk traffic.

184. Five countries (Angola, Ethiopia, Madagascar, Somalia and Tanzania) out of 18, own and operate national shipping lines and thus participate in the carriage of their individual international trade traffic to the extent possible. However, on a subregional basis, this effort is insignificant, due to the lack of subregional co-ordinated supply of traffic to the carriers.

185. The subregion is beginning to take cognisance of processes instituted by UNTACDA relating to the establishment and development of consultation machinery in shipping, in that an Intergovernmental Standing Committee on Shipping (ISCOS) has been established by Kenya, Uganda, Tanzania and Zambia. The ultimate ideal would be to expand it to include other countries of the subregion and to elevate it to the status of a Ministerial Conference as is the case in West Africa. Only in this way would ISCOS have the strength in numbers and traffic volume to be able to negotiate common tariffs for the benefit of member States of the subregion.

186. The need for trained personnel at all levels to man ships is very critical and the cost of such training to a nation can be enormous. There is therefore the need for the establishment of common subregional training institutions for such training, so as to enable a rational development of shipping in the subregion based on availability and future supply of trained personnel.

187. The general weakness of shipping in the subregion has been pointed out above - particularly, in the few number of countries that own and operate shipping lines and a plausable future approach could be based on the establishment of a subregional multinational shipping line with the full participation of most member States of the subregion. Coastal shipping could be viewed in a similar way.

188. Given the above, harmonization of maritime legislation can be easily achieved in the subregion.

189. The subregion has 24 mainland and 9 island ports, most of which are well spaced out. The main problems of the ports are operational, coupled with deficiencies in infrastructure, equipment and layout, which combine to result in low to average throughputs.

190. One other related major problem which adversely affects port performance in the subregion, is the deficiencies of transport links (road, rail and inland water) to the ports, which cause the clogging of port warehouses/storage space and leads to inability to discharge and consequent delay to vessels.

191. With the advent of containerization, ports in the subregion are making efforts to provide special handling components and other facilities, but this has not been easy due to the high cost of this equipment/facilities and the call by container vessels at secondary ports, which are ill-equipped to handle containers. The absence of designated principal and feeder ports (the latter serviced by well scheduled coastal shipping and the former supported by efficient/reliable inland transport links) makes the task difficult.

192. Under the above circumstances, the planning and development of shipping, ports and land transport in the subregion should be fully integrated to achieve maximum benefits.

Railways

193. The railways in the subregion are of two distinct groups, viz: (a) those that are independent (Kenya, Uganda, Tanzania, Sudan and Ethio-Djibouti) with a total network of about 6,468 km.; and (b) those that are integrated physically (Angola, Botswana, Malawi, Mozambique, Zimbabwe, Zambia and South Africa) with a uniform track gauge of 1,067 mm and 45 kg/m rails. The second group also links Swaziland and Zaire directly.

194. The present designed capacity of the network in the southern section of the subregion is adequate to serve the needs of the countries for the foreseable future and given the fact that the TAZARA has been built of 1,000 mm gauge, it is technically feasible to link Tanzania into the network.

195. The total network of the entire subregion is about 22,581 km (excluding 22,891 km for South Africa). The locomotive fleet of the system was about 1,882 units and the wagon fleet was 50,385 units in 1982 (both excluding some 5,101 locos and 188,730 wagons for South Africa).

196. Inter-State, transit and internal freight and passenger traffic in the subregion is quite substantial and projections show that, given better co-ordination of operations and an upward trend in economic growth/performance, rail traffic would increase substantially and the system would be still able to handle it, due to existing capacity under-utilization.

197. Railways of the subregion are not without problems. Although the southern infrastructure is physically integrated, operations, management, training, maintenance, regulations and procedures are not. As a consequence, recommendations regarding co-ordination among the railways in resolving the above problems on the one hand and between the railways and the other transport modes on the other hand, first at operating/management level by the railways and secondly at the policy level by the governments, have been made.

Roads and road transport

198. The total road network in the subregion is about 498,030 km, out of which seven countries (Angola, Djibouti, Ethiopia, Kenya, Mozambique, Somalia and Tanzania) share 258,200 km (52 per cent), while the seven landlocked countries (Botswana, Lesotho, Malawi, Swaziland, Uganda, Zambia and Zimbabwe) share 178,029 km (36 per cent) and the rest is located in the island States.

199. The road network densities in the subregion range from a low of 0.006 km/km^2 for Botswana to a high of 0.11 km/km^2 for Zimbabwe, with an overall average of about 0.06 km/km^2.

200. The existing inter-State trunk network is about 45,408 km (10 per cent of the entire mainland network). Inter-State links within the subregion are extremely few, at an average of no more than one between adjacent countries and even fewer between adjacent countries in other subregions. This can only be remedied through the implementation of the several identified missing link projects. At the moment, there are only 54 border crossing points in the subregion compared with the potential of 94. For example the potential number of crossing points between Angola, Ethiopia, Kenya, Malawi and Mozambique is 10 to 12, but only four actually exist and similar examples can be cited for other countries.

201. Only 57 per cent of the inter-State network is paved and the rest is gravel and earth roads. The condition of the paved network is generally average, while that of gravel and earth roads is generally poor, resulting in high vehicle operating costs on these roads. Road design standards in the subregion are a combination of American, British, French and Portuguese and there has been no serious effort to harmonize them so far.

202. Although total subregional vehicle population is not available, estimates indicate that traffic density (vehicles per 1,000 people) ranges from a low of 0.7 for Ethiopia to a high of 58.6 for Swaziland with most of the countries having less than 10 vehicles per 1,000 population.

203. Similarly, no accurate data is available for Average Daily Traffic (ADT), but calculations based on the US Highway Capacity Manual show that traffic densities on the inter-State roads are very low ranging from 8 to 131 per hour compared to a design capacity of 2,000 vehicles per hour on such roads.

204. The general finding is that inter-State road infrastructure and equipment in the subregion are grossly under-utilized due to operating restrictions and the low regulated rates usually established by governments.

205. Improved road transport services in the subregion will largely depend on the extent of harmonization and co-ordination of investment and services and the conclusion of subregional legal instruments relating to user charges, tolls and transit traffic agreement. Bilateral experiments between Kenya and Uganda in the use of a unified transit document and a series of transport protocols on an interregional transport agreement, covering inter-alia; vehicle dimensions, axle load limits, road user charges on transit vehicles, fares and charges, have been encouraging and could be applied on a subregional basis.

Co-ordination of the various transport modes

206. In view of the large number (7) of landlocked countries in the subregion, plus Rwanda and Burundi (though in the Central African subregion but mainly served from the East), the issues and problems of transit corridors are of major concern to the subregion. Containers and Inland Container Depots (ICD) are similarly a prominent feature of transit corridors in the subregion.

207. There are some seven such transit transport corridors in the subregion serving the landlocked countries and interior parts of seaboard States. These corridors originate from the ports of Djibouti, Mombasa, Dar es Salaam, Nacala, Beira, Maputo and Luanda. Most of these corridors use a combination of rail, road and inland water modes and on average, distances are quite long.

208. In view of the long distances, the inter-change from one mode to the other and in order to reduce port congestion, the use of containers has developed and with it has come the need for ICDs, at which the inter-change can take place and other associated activities carried out more efficiently and without hindrance to other operations..

209. In order to provide efficient and reliable transit services on the corridors, an integrated approach to the planning of transit corridors involving all the modes and related services is recommended. The general evidence shows that in the past, each mode was planned independent of the others, in spite of the fact that the modes were on one corridor and actually served the same traffic and purpose.

210. Adequate maintenance and effective utilization of existing infrastructure and equipment, as well as joint training facilities, either on corridor or on subregional basis are also highly desirable. This relates to roads, railways, ports and ICD's infrastructures and their equipment.

211. Poor communications between ports and inland destinations/terminals, an enormous amount of documentation, numerous/cumbersome procedures, transit insurance requirements and the lack of efficient forwarding services, all combine to make transport services, in general and especially to the landlocked countries extremely difficult, time-consuming and expensive.

212. A final element to any efficient transit transport services in the subregion entails the institutional arrangements whereby the landlocked countries could effectively participate and be mainly or partly responsible for the handling, transportation and the provision of related services for the traffic to and from their countries and especially in the territories of the transit nations.

Central African Subregion 4/

213. The Central African subregion consists of eight countries Cameroon, CAR, Chad, Congo, Equatorial Guinea, Gabon, Sao Tome and Principe and Zaire. Most of the countries are situated in the most difficult topographic area of Africa - tropical rain forest and swamps. The total surface area of the subregion is about 5.4 million km^2 and the total population is about 51.8 million.

214. The population densities for countries in the subregion from a low of 3.7 (for Chad) to a high of 900 (for Sao Tome and Principe) people per km^2. A closer examination of the data shows that only Cameroon, Equatorial Guinea and Zaire have densities ranging from 13.3 to 19.4 people per km^2, while the rest of the countries have between 3.7 and five people per km^2. The overall subregional density is only 9.6 people per km^2. In comparative terms, the subregion is extremely sparsely populated.

215. With the exception of Zaire (31.2 million population) and Cameroon (9.2 million), the rest of the countries have very small populations (Equatorial Guinea 0.4, Chad 4.8, Congo 1.7, CAR 2.5, Gabon 1.1 and Sao Tome and Principe 0.9 million people).

216. The average annual population growth rates in all countries of the surbegion are above 2% and Zaire is over 3%.

217. The GDP per capita of the countries for 1986 was US$2,850 for Gabon, US$1,134 Congo, US$1,034 Cameroon, while the other countries ranged from a low of US$122 for Equatorial Guinea to US$335 for CAR with the rest of the countries in between.

218. Economic performance, measured in GNP per capita growth rates in the subregion has been generally poor between 1980 and 1986. With little exception, there has been a decline and the few cases of positive growth have been insignificant or involved reductions in negative growth rates (e.g. CAR 0.8 to 1.2% and Sao Tome, Principe -16 to -8.5% and Chad -11 to -2.5%). The GDP per capita growth rates for the countries declined as follows: Cameroon 11.8 to 2.5%, Congo 16 to -11%, Gabon -5.4 to -8.6% and Zaire was stagnant at -4.8% upto 1983.

219. Given the population high growth rate in the subregion and declining per capita incomes, there is no doubt that transport demand has also been declining and existing infrastructure/facilities have not been adequately maintained, and new investments in the transport sector have either been reduced or completely postponed.

220. The poor economic performance of the subregion over the past years can be directly linked to the general economic decline in the industrialized economies and to the lower prices of the subregion's primary export commodities. Future growth prospects are therefore also linked to growth of the world economy and better prices for exports.

The Transport Sector

221. Transport is a primary and an important service in support of trade and other inter-active activities. Within the Central African subregion, trade

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among the member States is governed by the UDEAC and ECCAS treaties, which provide for a customs union and an economic cooperation community. Both treaties imply cooperation in the transport field, but the specific modalities of such cooperation or harmonization have not been clearly established and implemented.

222. Indeed there is substantial transit traffic between a few coastal and landlocked States and a small volume of traffic between some member States. However, the general evidence is that such movements are largely governed by bilateral rather than by subregional treaties.

223. A brief review of some important transport modes in the subregion follows below.

Air Transport

224. Between 1980 and 1984 this mode registered annual traffic increases of 9.3% for passengers and 2% for freight, with passengers reaching 6 million and freight 270,062 tons.

225. Four airports - Douala, Libreville, Kinshasa and Kigali obtained 50% of their traffic from intra-subregional passengers and handled most of the freight while the majority of the airports had outward-bound uni-directional traffic.

226. The route network in the subregion is undeveloped as evidenced by the fact that only 52 (i.e. 47%) of 110 possible city-pairs are operational and only 8 of the 52 provide regular and satisfactory services of some 180 bilateral agreements only 27% are among airlines in the subregion and 36% of them have not been implemented.

227. Cooperation among airlines in the subregion and with other African airlines remains poor, since it only involves assistance in stop-overs and general representation and does not extend to operations and traffic services. While some efforts have been made to improve infrastructure and navigation, a large number of the personnel are still expatriates, subregional training is inadequate and deficient in many aspects and management is generally poor.

228. There is a general lack of harmonization and coordination in policy, operations and other related activities at both the national and subregional levels.

229. Recommendations for the short- and long-term development of air transport in the subregion which should be implemented by the airlines and member States include but are not limited to the following areas activities:

- harmonization of aeronautic legislation and regulations, practices and procedures;

- improvement and standardization of training within the subregion through effective use of the multinational centre at Mvengue, Gabon;

- the establishment of autonomous airport authorities;

- the full implementation of existing/future bilateral agreements;

- the establishment/facilitation of procedure for the repatriation of airline revenues;

- the standardization of air navigation equipment; and

- the conclusion pool agreements relating to technical, operations, marketing and purchase of aircrafts, equipment and spares.

230. Some specific recommendations have been made regarding improvement of services in the Northern, Eastern, Western and Southern sectors of the subregion.

Railways

231. The four independent railways in the subregion (Congo-ocean (CFCO), Cameroon National Railways (RNCF/REGIFERCAM), Zaire Railways (SNCZ and CFMK), and Transgabonese Railways (OCTRA) are not interconnected and are of different gauges. They are all modern railways some of which have undergone recent modifications while others are still being improved. In general, railways play a major role in the subregion, not only to the countries in which they are located but also to the landlocked CAR and Chad.

232. The 515 km Congo-Ocean Railways which provides a partial vital link between Congo and Chad is in fairly good conditions and its rolling stock comprise 47 track locomotives, 20 shunting engines, 90 passenger coaches and about 1150 assorted wagons.

233. The Cameroon Railways has two lines, one from Douala to Nkongsamba (172 km) and the other from Douala to Ngaoundere. The former is an outdated line with only limited operations while the latter (884 km) is modern and has been realigned between Douala and Maloume and rehabilitated in various sections.

234. Its rolling stock comprise of 116 locomotives, power trolleys and railcars; 109 passenger coaches; and 1794 wagons. Annual traffic is about 2.2 million passengers and 1.9 million tons of goods.

235. Zaire's railways is made up of SNCZ (5280 km) and CFMK (366 km) and its 1067 mm gauge could facilitate inter-connection with Zambia and Angola with similar gauges. While most of the infrastructure is worn out, some sections have been rehabilitated beginning in 1983.

236. The rolling stock consists of 284 locomotives, 423 passenger coaches and 8345 freight wagons. Most of the equipment is relatively old and needs frequent maintenance.

237. Annual traffic amounts to about 5.6 million tons and only 0.4 million passengers, the latter mainly on the CFMK network.

238. The 635 km Transgabonese railway consists of two main sections (OWEND/BOOVE and BOOVE/FRANCEVILLE) which are in operations but with a 1435 mm gauge which does not enable interconnection with neighbouring networks of 1067 mm gauge.

239. This railway was recently constructed and is in good operating conditions with plans to extend it 245 km to the iron mining site at Belinga.

Projects

240. Several projects are currently in progress in Cameroon, Congo and Zaire, which when completed would substantially increase capacity and efficiency on the subregion's railway system. In addition to the ongoing projects, long-term master plan activities envisage the construction of railways between Sudan/Gabon via CAR, Cameroon/Gabon, Sudan/Zaire, Zaire/Congo and CAR/Cameroon.

Management and Operations

241. At the moment the turn-round times on the railways is not optimum and studies would be carried out and efforts made to reduce them.

242. Most of the railways do not have training schemes or programmes that can carter to their needs in basic, practical, further, advanced and continuing training - although one of them is making efforts to do so.

243. In view of the independent nature of the subregional railways, there is hardly any cooperation among the railways in the operation aspects and any technical cooperation that exists is strictly through the activities of the Union of African railways, since there is no subregion organization dealing with railways.

Harmonization and coordination with other modes

244. The general orientation of all railways in the subregion is from the coast to the interior and all of them serve as the first leg for traffic to the hinterland and the landlocked countries. The other modes with which they interchange traffic are mainly road and inland water. Yet there is no evidence that the operations of railways in the subregion are harmonized and coordinated with the other modes. In effect, traffic carried by rail to the interior is deposited at railheads where it is picked up by road or inland water mode as and when possible. As such, fresh and perishables products are not suitable railway traffic in the subregion.

Maritime Transport

245. Maritime transport in the West and Central African subregion has been fully described in paras. 39 to 45 and what follows below is merely supplementary information specific to the Central African subregion.

246. The maritime fleet of the subregion was estimated at 368,579 DWT in 1986 and was about 0.058% of the world total. The subregion's contribution to the objective of 20% world tonnage assignment to developing countries within the context of the Third United Nations Development Decade, should have been 0.17% or about 1.1 million tons DWT. In effect, the subregion had only 34% of its assigned normative capacity.

247. It is not only evident that the subregion is grossly lagging behind in the achievement of the objectives of the current UN Development Decade, but also highly unlikely that the situation could be remedied between now and 1990. Between 1980 and 1985, the subregions shipping capacity has fluctuated between 0.054 and 0.06% of total world capacity, which is rather insignificant to indicate any improvement.

248. Cameroon plans to augment its fleet capacity by about 200,000 DWT by 1990 and unless other countries did the same, the general shipping situation in the subregion would not change much.

Roads and Road Transport

249. The road transport infrastructure of the Central African subregion[5/] consist of about 284,721 km made up of approximatley 40,800 km primary, 78,300 km secondary and 165,600 km unclassified roads. With a total surface area of about 5.462 million km^2, the road density is a mere 0.05 km per km^2 and the individual rational densities range from a low of .02 km for Chad to 0.13 km for Cameroon. In general, the Central African subregion has the least road density compared with the other African subregions.

250. Of the total regional network only about 2.4 per cent is paved, 11.5 per cent gravelled, 37.6 per cent is earht and 48.5 per cent is tracks. Thus, a substantially large proportion of the road network is basically undeveloped. In general the conditions of roads in the subregion vary from fair to poor although the conditions slightly differ from country to country and from road to road, depending on the importance attached to the road. The major causes of the poor conditions of roads are difficult topography (tropical forests, heavy rains, etc.), inadequate and irregular maintenance and the fact that only a small per cent of the network is paved. A brief country-by-country situation is given below.

251. In the Central African Republic (CAR), only 345 km (24.5%) of the 1408 km Trans-African Highway (Lagos-Mombasa) in that country is paved and the rest is of gravel standard. In view of the fact that this is not only part of the TAH, but the major road in the country, priority is given to both its maintenance and up-grading the gravel sections to paved standards. Funds for its up-grading are being provided by the World Bank, FAC and CCCE. Similar efforts are being made to improve, maintain and up-grade the major feeder roads to the TAH within CAR.

252. In the Congo, there are about 2,373 km of feeder roads to the TAH, of which 27 per cent is paved, 24 per cent gravel and 49 per cent earth roads. Several activities are in progress for the paving/improvement of sections of

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5/ Cameroon, CAR, Chad, Congo, Eq. Guinea, Gabon, Sao Tome and Principe and Zaire.

the major national roads which are mostly feeders to the TAH and constitute the inter-State links to CAR, Cameroon and Gabon.

253. The general condition of the network is poor due to neglected maintenance as a result of lack of funds. The country had introduced a Road Fund since 1980 and this is contributing to the maintenance of roads in the country.

254. Zaire has the single largest land area in the subregion and its road network of about 145,000 km provide largely segmented access to the numerous inland water terminals and railheads in the country. An insignificant fraction (2400 km or 1.7 per cent) of the network is paved and coupled with the difficult topography and heavy rains, large sections of the network consisting of earth roads are passable only seasonally.

255. Besides the poor physical condition of the network, the problems of Zaire's road transport are associated with short road distances, frequent stops and discharging/loading, large number of low capacity bridges and narrow road widths, all of which necessitate the use of small capacity vehicles which are not suitable for the traffic and expensive to operate.

256. Equatorial Guinea has a very small road network of 230 km on the mainland out of which 120 km (52%) is paved and the balance (110 km or 48%) is laterite. The general condition of the network ranges from poor to fair, however efforts are being made by the government to improve the maintenance.

257. The TAH feeder road in Chad extends from Ndjamena to the Cameroon border at Beinamar. Chad's total network consists of 1,113 km, some 156 of which (i.e. 14%) is paved, 424 km (38%) is gravel and the rest (533 km or 48%) is earth roads.

258. As a consequence of many years of political unrest in the country, road maintenance has been neglected for so long and the conditions of all roads in the country are generally poor.

259. The section of the TAH in Cameroon is about 1040 km of which 401 km, 313 km and 320 km are paved, gravel and earth, respectively. Another 2640 km of feeder roads link to the TAH in Cameroon. The country is devoting substantial financial resources to development of roads and especially the sections of TAH in the country.

260. Road maintenance is being given fair attention and as a consequence the overall conditions of the road network are fairly good, except on the sections of the TAH and feeder roads which are earth and are frequently very bad and/or impassable during heavy rains.

261. With regards to vehicular traffic, the subregion has about 356,500 vehicles of all types. The average vehicle density for the surbegion is about 6.9 vehicles to 1000 persons although the individual national densities range from a low of 1.9 vehicles to 1000 population for Chad to a high of 24 vehicles for Gabon, with CAR, Cameroon and Congo with about 9 vehicles to 1000 population.

262. The vehicle composition of the subregion is biased in favour of commercial vehicles. With the exception of CAR where commercial vehicles only constitute about 23% of the fleet, the respective percentages for the other countries are as follows: Cameroon 69.5%, Chad 51.6%, Congo 53.8%, Gabon 66.7% and Zaire 93.8%.

263. With the exception of Zaire, the rest of the fleet in each member country of the subregion is made up of light vehicles and there is no information on the fleet of Equatorial Guinea and Sao Tome and Principe.

264. Registration of new vehicles, which represent the raw data on which annual vehicle growth rates are based is available only for three countries (Cameroon, CAR and Gabon) and even then only for 1982. There is therefore a five-year lag in the data and it is quite probable that given the general economic slow-down over the past five years, the overall vehicle population including new registrations have decreased in many of the countries.

265. Within the subregion, there are about 22 important inter-state road links consisting of about 14,879 km of roads of various design standards and in various conditions.

266. In general there is no uniform road design standard since the existing ones are a carry-over from British, French and Spanish. At the moment, it is hoped that standardization of road design standards in the subregion could be brought about through the activities of the TAH Bureau. Not only do design standards vary from country to country, but road inventory techniques also vary, so that there is no standard method of classifying the conditions of roads on a subregion-wide basis.

Traffic Volume/Flows

267. No complete and reliable data on road transport for countries of the subregion is available although it is known that a very substantial part of the traffic between landlocked Chad and CAR as well as between the mainland countries of the subregion is carried by road transport. The incomplete data is frequently given in value rather than in volume which is a better base for transport analysis.

268. Available data shows that the value of CAR's exports increased from 16.9 to 24.4 billion CFAF between 1979 and 1980, for an annual growth of about 44%, while imports increased from 14.9 to 17 billion CFAF (14%) during the same period. The main export items consisted of diamonds, timber, coffee, cotton and tobacco.

269. In terms of volume, Cameroon alone handled about 57,132 tons (48,591 tons export and 8,541 tons export) of CAR's transit traffic in 1984, while the balance of 11,559 tons were through Chad, Sudan and Nigeria - for a total of about 68,691 tons. The total international traffic was said to be about 82,349 tons, while total internal plus international traffic was about 151,040 tons. It could be assumed that the traffic difference between 82,349 and 68,691 tons was handled by other transport modes, especially inland water and the modal split of internal traffic is not known.

270. A rough estimate showed that they were about 20,210 vehicles in CAR in 1984, made up of 9,440 light vehicles, 6,755 pick-ups, 3,010 trucks and the balance buses and special-use vehicles. While some 86 enterprises have formed "Groupement des Transporteurs Centrafricains," they possess only about 245 vehicles with a registered capacity of about 4,500 tons.

271. Vehicle operating costs and freight/passenger charges are not available. However, given the landlocked situation of the country, the inevitable importance of transport in the economy and concern of the government, all transport fares and charges are established by the government and are more likely to be reasonable than excessive.

272. Between 1974 and 1983, Zaire's external trade traffic rose from 3.6 to 4.8 million tons for an overall increase of about 33.3% or an average annual growth rate of about 3.3% during the 9-year period. Exports rose from 1.5 to 2.3 million tons (i.e. 4.9% p.a.), while imports rose from 2.19 to 2.5 million tons (i.e. 1.5% p.a.) during the period.

273. A closer examination of the traffic shows that from 1981 to 1983, agricultural tonnage declined from 265,597 to 236,342 tons (i.e. -11%), while minerals increased from 1.6 to 1.9 million tons (i.e. +16.8%) over the period. There was a negative growth (-15.2%) for industrial products, which fell from 160,963 to 133,396 tons between 1981 and 1983.

274. The major export commodities included wood, cocoa, coffee, rubber, palm oil, quinquina, gold, copper, zinc, cobalt, diamonds, crude oil, cement and fuel oil. While it is evident that most of the international traffic leaves/arrives the country by sea and uses a combination of modes (road, railway, inland water, air, etc.) for internal mvoements, the modal split of this movements and annual tonnages involved are not available for any rational analysis. Thus, the share of tonnage handled by road transport can not be determined. It is however definite that road transport plays an increasing important role in the internal movement of traffic within Zaire and between Zaire and the neighbouring countries of Zambia, CAR, Congo, Uganda and possibly southern Sudan.

275. They are no comparable road traffic data for Cameroon although it is evident that landlocked CAR and Chad largely depend on road transit through Cameroon and the northern parts of Congo and Gabon also rely on road transport from the southern area of Cameroon. Similarly, neither international trade data nor road traffic data for Congo, Chad, Gabon and Equatorial Guinea are available in tonnages and the extent of road transport traffic cannot be determined.

276. In general, it is apparent that road transport plays an important role in the international trade among countries of the subregion on the one hand and neighbouring coutnries in other subregions, given the large interior land area and the configuration of national boundaries - all of which tend to favour and facilitate interstate linkages by roads.

Inter-State missing Links

277. While there is some inter-state road transport in the subregion, the current utilization and future development is hamered by the absence or poor conditions

of several inter-State links. The number of such missing or substandard links is quite numerous in the subregion as a whole and below is a brief enumeration of some of the most important ones.

278. Some 1547 km of the Lagos-Mombasa TAH transverses the north-eastern part of Zaire and several sections thereof together with important feeder links are missing or substandard. On the Kasindi-Kisangani (1828 km) section of the TAH, the subsections Kasindi-Belika (623 km), Belika-Baego (55 km) and Baego-Madula (128 km) are still earth roads which need upgrading to at least gravel standards to enable inter-State traffic operations.

279. On the (717 km) Kisangani-Bangassou (CAR border) section of the TAH in Zaire, Kisangani-Buta (321 km), Buta-Bondo (200 km) and Bondo-Bangassou are gravel, earth and earth substand-subsections which all need to be upgraded.

280. The subregion has a total of about 13 important inter-State missing links distributed as follows: CAR 2, Congo 3, Gabon 1, Cameroon 6 and Equatorial Guinea 1.

281. There is general evidence that both infrastructure and equipment capacities are grossly under-utilized in spite of their inadecuacy and poor conditions.

282. With the exception of the two landlocked countries and Cameroon, inter-State transport industry in the subregion is largely undeveloped, despite the fact that road transport plays a critical role in internal distribution within each country in the subregion.

PART II

Analysis of the prospects of Regional Harmonization and Coordination

Criteria

283. As indicated in paragraph 9 in the introduction, this part of the report is an attempt to analyse the prospects and feasible extent to which the entire transport system and the various modes can be harmonized and coordinated at the regional level. This analysis proceeds from the assumptions that the feasibility and extent to which a mode could be harmonized and coordinated at the regional level depends on:

(i) the extent to which the mode is already harmonized and coordinated at the subregional levels or its potential for such harmonization and coordination;

(ii) the popularity or actual usage of the mode at the subregional levels;

(iii) the potential and probability of the mode actually fostering the physical integration of the continent; and

(iv) the impact of such a mode on the socio-economic condition of Africa.

284. The analysis also considers the inherent advantages of each mode in the context of the entire African region. The analysis which follows, deals principally with roads/road transport, air, maritime and railways, and only a casual look is taken at inland water transport for reasons which will become apparent in the analysis.

Roads and road transport

285. In transport economic terms, road transport is regarded as the most flexible, cheap and convience modes of transportation used by most people everyday. These, perhaps exaggerated attributes of road transport is due to the affordability of vehicles by most average citizens and the fact that the capital costs of infrastructure is usually borne by the governments with no immediate intention of recovery, since it is usually regarded as a social infrastructure. Even where recovery is planned, it is usually indirect in the form of road users charges or in taxes, levies, duties and excises associated with vehicles, spares, fuel and lubricants - phased over the life of the road.

286. All African countries without exception have roads (which is not the same for other modes) and very serious efforts have been made over the past two decades by all governments to develop national road networks. A few countries and especially subregional economic groupings are making considerable progress in providing inter-state road links and harmonizing road transport and substantial public expenditures are devoted to roads.

287. A careful review of the subregions shows that the legal framework and large sections of the physical infrastructure are fairly well established in West (ECOWAS), Central (ECCAS) and Eastern/Southern (PTA, SADCC) African subregions. At the continental level, the Trans-African Highway programme has fostered the framework and established a network of highways which will eventually link up all or most of the mainland countries, and above all, some of the governing bodies of these highways are operational.

288. Efforts in preparing an African Highway Code are at an intermediate stage and although efforts at concluding a motor vehicle insurance scheme for the entire region failed, replicas of this scheme have been adopted in some subregions (ECOWAS, PTA, SADCC). The physical infrastructure of the designated regional network already exists in North Africa and is in good conditions, in spite of the fact that operations on it are somehow hampered by national differences in the subregion.

289. On the operating side, inter-state road transport between adjacent states in the subregions and between transit and landlocked states, is small-scale and reasonable in some cases, inter-subregional operations are generally insignificant either due to distances, conditions or infrastructure or regulatory procedures. The general evidence is that the potential for inter-state/inter-subregional traffic (passenger and goods) is very large, given the fact that this would usually involve private vehicles, owner/operator, and small to medium size private and parastatal firms. It should be pointed out that the capital investment of these operators is minimal to moderate and operations can be usually tailored to suit traffic demand.

290. It should be recapitulated that the major activities of roads and road transport in Africa revolve around the following:

(i) The Trans-African Highway system which is designed to provide major road links among all African countries and facilitate the physical integration of the continent. Countries through which none of the main highway pass, are linked to the system by feeder roads.

(ii) The African Highway Code, which is designed to provide a uniform highway code and regulations on all inter-state roads so as to facilitate the trans-continental movement of road vehicles - the first phase of this code under preparation by the British Transport and Road Research Laboratory (TRRL) is scheduled for introduction and pilot trial, especially for trucking in selected African countries in mid-1988.

(iii) The African Highway Master Plan which ECA in collaboration with the Italian Government is preparing and which is designed to establish uniform design and other road standards, including maintenance, especially for the Trans-African Highways.

291. As already indicated above, several basic legal instruments, bodies and institutions for dealing with roads and road transport have been established at the subregional levels and activities are in progress for the improvement of infrastructure and services at the regional level. All of these augur well not only for the development but the ultimate harmonization and coordination of the road transport mode in Africa.

292. The last point to be examined is the potential impact of road transport harmonization at the regional level in Africa. The general evidence points to the fact that road transport in the region is barely beginning to develop and that the potential traffic is quite enormous. This is supported by historical trends of road transport development in other regions, coupled with the flexibility and affordability of the mode's services to a large proportion of the population.

293. The existence of some 14 landlocked countries in the region, the great land distances between ports and inland destinations, the heavy capital costs and thus paucity of inter-state railways in the region and the unsuitability and high costs of air transport for the carriage of low-value bulky volume agricultural commodities, all give road transport an edge over the other modes.

294. Further analysis show that road transport already operates between and among several states - although with many difficulties - and given the proper environment, would grow very rapidly. Trade between most African States involves small- to moderate-scale traffic (passengers and goods) and such traffic could be seasonal and highly volatile, thus, requiring small-scale operations, most suitable to road transport. Africa is particularly prone to natural disasters (drought, famine, etc.) and has largely depended on international humanitarian assistance requiring transport to remote areas which can be reached by some form of road transport (while airlift and droping is more rapid, the cost is quite enormous and usually far exceeds the value of the relief suplies.)

295. It is worthwhile to point out that economic and social interaction in Africa are more likely to be cultivated and enhance by individual and small-scale enterpreneurs who have the ability to seek out markets or provide specialized service, than at the official level. Such cross-border trade, activities and services constitute potential road traffic, more than any other mode.

296. It is therefore the seemingly individual/small-scale entrepreneur and activities, using flexible and affordable road transport that can lay the foundation for socio-economic integration in Africa and as such, the potential and impact of harmonized and coordinated road transport in Africa are more than worth the efforts.

Air Transport

297. The subregional analysis of this mode reveal a strong external (inter-continental) orientation of services, that subregional services range from

poor to fair and that competition by foreign carriers is fairly stiff. Inter-subregional services on a regular/frequent basis by African carriers are few and quite often such services are provided by foreign carriers.

298. As to how well the mode is already harmonized and coordinated at the subregional levels, the conclusion is negative. The evidence from the subregions, without exception points to lack of harmonization and coordination and intense competition between the subregional carriers on the one hand and between the subregional and foreign carriers on the other. Indeed all the subregional carriers operate under the same ICAO international rules and regulations, which pertain to the technical and physical aspects of air transport and in no way apply to or imply harmonization and coordination of subregional commercial services or operations.

299. The potential for subregional harmonization and coordination of air transport services are slight to moderate and mostly in the medium- to long-term period, due mainly to:

(i) the existence of fairly numerous national carriers which all compete in providing subregional services in spite of their limited capacities and low traffic supply;

(ii) the inclination and propensity of member States to maintain and subsidise the national carriers for reasons other than economic;

(iii) the close collaboration of subregional carriers with foreign carriers in readily granting them traffic rights on favourable conditions, than to subregional carriers;

(iv) the conclusion of management and other cooperation agreements between subregional and foreign carriers, whoch do not foster subregional harmonization and coordination.

300. With regard to the popularity and actual utilization of the mode at the subregional level, there is some utilization but this does not imply popularity. The major characteristics of air transport are speed, comfort and convenience at a price, for those who can afford. It is not "the peoples transport" and its clientelle is selective and limited - particularly in the African context. A rough profile of air passengers in Africa seems to indicate that about 3 per cent of the population can afford to use inter-subregional/international services regularly while another 5 to 8 per cent use local services regularly. Thus, in general the popularity or actual use of air transport services in the subregions or Africa as a whole remain limited, due partly to the comparatively high cost of services when compared with average incomes.

301. It should however be pointed out that there is a positive correlation between higher incomes and air passenger traffic or travel. As such, the popularity and utilization of the mode would increase with rising incomes.

302. Given the vast area of Africa and the great distances between nations, coupled with variegated and difficult topography which make the land access very high, the potential and probabilty of air transport fostering the physical integration of the region are fairly good, even though not yet realised.

303. While it is generally true that air transport's share of the total regional traffic is relatively small, it should be pointed out that the passenger component of this traffic constitutes a very substantial share of intra-regional passenger traffic, and together with the small quantity of freight, represent a very important activity in fostering physical integration of the region. It would be very difficult, if not impossible for any physical contact, let alone integration between countries in Eastern/Southern African subregion and those in West Africa, take place except by air. Even with the complete development of the Trans-African highway network, air transport would remain the fastest and most direct means of regional integration in Africa.

304. As briefly mentioned above, the actual and/or potential impact of air transport on African economies does not and would not result from a larger share of intra-African traffic but rather from the specialized and high value of the traffic, such as businessmen, business executives, academicians, students, representatives/delegates to conferences, seminars, symposia, etc. or high value commodities/goods and services.

305. While this is currently insignificant, the potential impact remains good and the probability high.

Maritime transport

306. The subregional summaries clearly show the importance of this mode in carrying over 90 per cent of all foreign trade traffic and invariably, without exception, the traffic is to/from overseas. With the exception of the West and Central African subregions where a ministerial conference is attempting to harmonize and coordinate shipping, shipping in the other subregions is largely the individual concern of national shipping lines and therefore remains unharmonized and uncoordinated.

307. The North African subregion owns about 80 per cent of Africa's shipping capacity, yet even within that subregion, the mode is not harmonized and coordinated and very little of the activities are intra- or inter-subregional. In the Eastern/Southern African subregion, there are few national shipping lines and capacity is very small, yet there is no subregional harmonization and coordination of shipping.

308. From the volume (tonnage) point of view alone, it is evident that the mode is extensively utilized in all African surbegions, particularly in international and minor transhipment and the small volume of intra-African trade that currently takes place. It must be emphasized that most inter-State trade in Africa is directed towards the interior and across borders, rather than along the coast and as such does not depend on shipping, as such.

309. The exception to the above is hydro-carbons from the few West/Central African oil producing States to other African States which partly and/or largely depend on shipping (tankers) for their transportation.

310. Under the prevailaing circumstances, the potential and probability of shipping fostering the physical integration of Africa is questionable. This however does not imply that maritime transport has no role or potential in fostering economic and physical integration in Africa, but that the current set-up and direction of trade and sea-borne traffic, leaves room only for cautious optimism. It is apparent that if intra-African trade as currently formulated in the Lagos Plan of Action were to become a reality, the role of shipping in inter-subregional trade between and among all the subregions will be very crucial, given the fact that any substantial volume of traffic could be transported more cheaply by sea. And the caveat to the above conclusion is, when and only when maritime transport in Africa is well harmonized and coordinated to the extent that intra-regional freight rates are established by African shipping authority with due regards to regional integration in Africa.

311. If intra-African trade were developed to the extent that a mere 20 to 30 per cent of the current sea-borne traffic were the intra-African maritime traffic, there is no doubt that the mode would have a great impact on African economies. A ray of hope in this regard is the abundant fact that a large number of goods/commodities which are currently being imported by some African countries as processed finished products initially originated from other African countries as raw materials and semi-finished products which were exported overseas. The development of intra-African trade would enable the direct movement of this traffic from one African country to the other.

312. Thus, the impact of maritime as well as the other transport modes on the economies of the African region could largely depend on how well intra-African trade has been developed, rather than exclusively on the internal harmonization and coordination of the transport system.

Railways and rail transport

313. From the proceeding subregional summaries, it is evident that all the four subregions have railways and that only the North (Maghreb) and Southern African subregions have a reasonably integrated network involving three and 7 countries, respectively. The physical integration of the networks however does not necessarily mean that operations are integrated.

314. With regards to the extent to which railways are harmonized and coordinated at the subregional level, seven measures have been introduced by the Union of African Railways (UAR), dealing largely with the technical aspects of harmonization and coordination, such as: use of air brakes, adoption of monobloc wheels, definition of coupling devices, etc.

315. The railways of the Maghreb countries, the TAZARA, the southern African countries, RAN, Kenya-Uganda and Senegal/Mali, both have physically integrated

networks and can therefore be regarded as fairly harmonized and coordinated as far as infrastructure is concerned. In most cases, there is interchange of traffic and wagons at the borders and in other cases, there are through train services (TAZARA, RAN, Ethio-Djibouti, Swaziland-Mozambique, Malawi-Mozambique, Zimbabwe-Mozambique, Kenya-Uganda and Algeria-Tunisia) from one country to another. In summary, while there is a fair measure of infrastructural harmonization and coordination in the subregions, there is perhaps not as much harmonization and coordination of operations and services as indicated by the physical integration of infrastructure and similar technical characteristics.

316. The actual utilization of railways in the subregions is self-evident, while their popularity can only be determined on relative qualitative and comparative terms. Africa's 55,000 km of rail track is insignificant when compared to some 2 million km of roads and passable trails and is therefore considered very sparse. It is estimated that railways carry about 10 per cent of all inland traffic in Africa and the percentages are quite high for some countries. Most African railways concentrate on freight and the few that provide passenger services are largely confined to major urban and inter-urban areas, with very few providing inter-State passenger services.

317. Where railways exist, major importers/exporter utilize their services, but in general, railways are not the popular mode for passenger services in most African countries, mainly as a result of lack of facilities and the importance usually attached to freight traffic. The inherent advantage of railways in carrying extremely heavy and bulk traffic is well established in most African countries, where such traffic exists.

318. Parallel roads to most railways in Africa foster competition between the two modes, and tends to weaken the strength of railways.

319. As to whether railways have the potential to foster the physical integration of Africa, the answer is not unequivocal. At the moment, the North and Southern African railways are infrastructurally integrated and several other railways provide through services to second countries (see paras. 247). In addition there are plans to inter-connect RAN, OCBN, Guinea, Togo, Ghana and Senegal/Mali railways so that Niger, Burkina Faso and Mali (all landlocked) would be linked to Benin, Cote d'Ivoire, Guinea, Ghana, Togo and Senegal by rail. Several other plans involving railway links within and between the various subregions exist. All these plan if implemented would add about 25,000 km of rail track to Africa's existing network[6] and indeed foster the physical integration of the continent.

320. Given the economic situation of Africa (limited resources, generally poor economic performance, limited inter-State traffic, the high capital cost of railways and the existence and fast development of alternative modes),

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6/Union of African Railways: Retrospect and prospects.

it is most unlikely that even 10 per cent of this plan would be implemented during the next five to ten years. The long-term prospects are anybody's guess.

321. In conclusion, the potential exists but the probability is extremely remote for railways fostering the physical integration of Africa.

322. Finally, the impact of railways on African economies can be deduced from their current and potential level of activities in the region. The 10 per cent of traffic cannot be easily discounted as insignificant and the special role they play in moving very heavy and bulky traffic over long land distance at fairly reasonable costs cannot be effectively substituted by other modes.

323. The impact of railways on African economies as a whole is not great and the short- and medium-term propsects are no better. However, there are some African countries on whom the impact of railways is enormous and given railway extensions to the several landlocked countries and some inter-connections of existing or planned networks, the overall impact could be substantial.

Inter-modal harmonization and coordination

324. The above analysis has examined the existing state of and the prospects of harmonizing and coordinating the individual modes at the regional level. A second and perhaps critical aspect of harmonization and coordination deals with relations between/among the modes. This is important because the traffic carried by one transport mode is either originally or subsequently carried by another mode, thus, the need for inter-modal harmonization and coordination.

325. Harmonization and coordination in this latter sense does not and cannot apply to infrastructure and equipment (since these are extremely specialized for each mode), but rather to the interface point facilities. The basic legal instruments, conventions and other characteristics governing each mode are extremely specific, so much so that harmonization and coordination as applies to a single mode is impractical at the inter-model level. Not withstanding the above, all transport mdoes are designed to serve one main purpose i.e. to transport goods and/or persons and quite often handle the same traffic and compete with or complement each other. There is therefore need and improved efficiency, if the individual modes were not only internally harmonized and coordinated, but equally well inter-faced with the other modes, wherever necessary.

326. The general picture of modal interface in Africa, beginning at the surbegional level is that (i) railways and roads interface with maritime transport at most major ports in all the subregions (e.g. Port Sudan, Djibouti, Mombasa, Maputo, Lobito, Douala, Apapa, Abidjan, Dakar, Rabat, Tunis and Alexandra, just to mention a few); (ii) most interior railway terminals interface with roads; (iii) all airports inter-face with roads and a few with railways; and (iv) most inland water transport services inter-face with road and rail transport.

327. The general situation in Africa is that most modal inter-face facilities are beset with problems resulting from poor design/layout, uncoordinated procedures, schedules and operations and due to inefficient management. The point has already been alluded to elsewhere in this report, where lack of inter-face coordination between the ports and the other transport modes, results in induced warehouse/storage space shortages, ultimate delays to vessels and comparatively higher transport costs. Similar or other modal inter-face problems with adverse effects on overall transportation can be cited for other modes: rail and roads, roads and inland water, etc.

328. In summary, in a large number of cases, the various transport modes are not properly coordinated at the modal inter-face points. While acknowledging the fact that the various transport modes cannot be harmonized and coordinated in the stricter sense of within mode harmonization and coordination, a lot can be done to achieve better services through better design of inter-face facilities and coordination of services at the inter-face points.

329. In the developed countries and even in other developing countries, it is accepted and established standard operating procedures for:

(i) vessels to discharge container and other consolidated cargoes directly onto railway wagons or road trailer-tractors for immediate departure to inland destinations, thus avoiding the multiple handling involved in port warehousing and stacking of containers and their subsequent loading and despatch.

(ii) the automatic and efficient transfer of goods and passengers from one mode to the other(s), taking into account the specific requirements and characteristics of the modes;

(iii) the use of through way bills and single insurance coverage for the entire journey, irrespective of the number of modes employed;

(iv) the reduction in absolute numbers and use of aligned transport documents;

(v) the synchronization of services at inter-face points so as to avoid delays and minimize warehouse/storage space requirements;

(vi) the consolidation and breaking of bulk (stuffing and unstuffing) at points other than busy ports; and

(vii) the customs inspection of goods and assessment of duties at destination or places other than busy ports.

330. These are only some of the means by which harmonization and coordination among the various transport modes can be achieved with substantial efficiency and cost-savings to the regional economies.

PART III

Summary and Conclusions

331. The studies on the harmonization and coordination of the various transport modes in Africa have been intensive and extensive, covering each transport mode (roads and road transport, railways, air transport, maritime/ports and inland water transport) in the four subregions. In addition, the transport economics aspects and multimodal transport/consolidated subregional reports were prepared for each subregion. Thus, the regional consolidated report is the culmination of the studies and is designed to indicate the extent to which the various transport modes have been harmonized and coordinated at the subregional level and whether/how they can or should be harmonized/coordinated at the regional level.

332. The proceeding section of this report has dealt with harmonization and coordination at two levels, first within the individual modes at the subregional and regional levels and secondly at the inter-modal level between/among the modes. The global results of the analysis show that while no single mode has been completely harmonized and coordinated at either the subregional or regional levels, the extent of this difficiency is much worse for some modes than others and that the prospects and potential for regional harmonization and coordination are better for some modes than others.

333. With specific reference to the individual modes, roads and road transport is not only the most popular and widely used mode, but is fairly more harmonized and coordinated than the other modes, while at the same time has the potential and better prospects for regional harmonization and coordination, due to several reasons including the following:

(i) the Trans-African Highway programme, which is regional in scope;

(ii) the ongoing preparation of an African Highway Code (regional in scope);

(iii) the conclusion of subregional motor vehicle insurance schemes in the ECOWAS and PTA states;

(iv) the designation of inter-State roads in some subregions including the conclusion of road transport transit agreements;

(v) the planned studies of an African Highway Master Plan;

(vi) the existence and/or completion of major sections of the Trans-African Highways network in several countries and subregions, and finally

(vii) the commitment by member states to the idea and objectives of the Trans-African Highway system.

334. These are only some of the activities and instruments that attest to the extent to which roads and road transport has been harmonized and coordinated at the subregional level and the encouraging prospects for its harmonization and coordination at the regional level.

335. It is imperative that these efforts not only be maintained but should be substantially increased so as to bring the Trans-African Highway system into full harmonized and coordinated operations at the regional level.

336. The analyis indicates that air transport is fairly extensively utilized in all the African subregions for domestic, inter-subregional and international services and although the total traffic (passenger and freight) is comparatively small when compared with other regions of the world, the special attributes of air transport and the value of the traffic are extremely critical to the region's economies. The actual situation differs from country to country and within the subregions as some countries earn a substantial portion of their foreign exchange from tourism activities which are intimately tied to air transport.

337. While the technical aspects are well harmonized and coordinated at the international level by ICAO and at the regional level by AFCAC and AFRAA, operations are generally the responsibility of individual carriers and as such are largely unharmonized and uncoordinated at the subregional and regional levels.

338. As pointed out in the proceeding section of this report, the volume of air traffic in the regional is comparatively small, but such traffic usually comprise of high-value commodities, critical supplies, businessmen, company executives, policy makers attending conferences, seminars and etc., all of which are extremely important for the regions development. The role of air transport in present and future movements of goods and persons is well established and Africa fully realises that it cannot do without air transport.

339. The urgent need for the harmonization and coordination of operations has been fully recognized by African countries and some actions have either been taken or planned to achieve these. Among these are:

(i) the conclusion of the African Air Tariffs Convention (AFRATC), which has established and is responsible for the periodic review of air tariffs in Africa;

(ii) plans for joint ventures and operations of airlines, which will enable harmonized schedules, better utilization of equipment and more frequencies;

(iii) the establishment of subregional training centres for the training of pilots and aircraft technicians;

(iv) the joint use of maintenance centres; and

(v) plans for the establishment of multinational airlines.

340. The prospects for implementing most of the above are better than average during the short- and medium-term periods. This would not only foster full harmonization and cooperation in the region but would enable African carriers to better compete with foreign carriers, while at the same time providing better services in the region.

341. The importance of maritime transport in Africa has been noted in that it carries about 90 per cent of the region's foreign trade traffic and is extensively utilized in all the subregions. Given the facts that the continent is completely surounded by water, has some 30 coastal States and the trading pattern is largely outward oriented and is likely to remain so for a long time, maritime transport would remain the dominant international mode in the region.

342. As far as harmonization and coordination are concerned in the mode, there is little positive evidence, except in the West and Central African subregions, where the Ministerial Conference is fostering such cooperation in policy, operations and technical aspects. There is inadequate capacity in all, except the North African surbegion.

343. In general Africa is an open region in which foreign Conference Lines compete very intensively not only in the carriage of international but coastal shipping traffic. At the same time, there is very little inter-subregional or intra-African traffic carried by this mode. The lack of cooperation has meant that excess capacity in some North African countries has not been available to capacity-deficit countries within that subregions or to other subregions.

344. The prospects of harmonizing and coordinating maritime policies and operations in the entire region are not very promising, especially in operations, during the short- and medium-term periods. This is due to the predominantly outward direction of African maritime traffic to other regions of the world; the extremely small volume of maritime traffic that moves between/among the subregions (East to West, North to East/South, West to to North and vice versa); and the present and continuing future supply of capacity by and influence of foreign Conference Lines in African maritime transport.

345. The above conclusion is particularly true at the regional level, as it is evident and apparent that something is already being done and a lot more can be done to achieve harmonization and coordination of maritime activities at the subregional level. The existence and activities of the Ministerial Conference on Maritime Transport for West and Central Africa and ISCOS for Eastern/Southern Africa have been mentioned in this report. In contrast, the North African coutnries belong to the Arab League shipping organization, whose influence is strictly limited in the other subregions.

346. It is therefore feasible and advisable that harmonization and coordination of maritime transport in Africa should be persued on subregional basis initially with the prospects for regional harmonization and coordination being viewed in the long-term period when trade and other cooperation arrangements as established in the LPA would have come to fruition.

347. Harmonization and coordination of maritime transport at the subregional level should be envisaged in the following areas:

(i) joint subregional ventures and operations;

(ii) harmonization of surbegional maritime legislation;

(iii) establishment of subregional training centres for all levels of personnel;

(iv) establishment of subregional coastal shipping services; and

(v) establishment of multinational (subregional) shipping lines.

348. The above provide a rational and cost-effective approach to harmonization and coordination of maritime transport at the subregional level and a logical step in the eventual harmonization and coordination at the regional level.

349. With the exception of the Southern African and Maghreb countries' netowkrs, railways in Africa are not physiclaly integrated in spite of the fact that several national networks provide both direct and indirect services to neighbouring countries. In most cases, even where the networks of two nations are physically inter-connected, the two railways still operate as separate entities, with the common purpose of traffic interchange.

350. As a result, African railways are not harmonized or coordinated even at the subregional level, except in the few cases (TAZARA and RAN) where the organization and operations are based on bilateral arrangements between the two countries.

351. At present, there are no harmonized and coordinated railways in the continent, providing through services to several coutnries within subregions or between subregions. Thus, harmonization and coordination of the mode at the subregional and regional levels has to be viewed and/or persued in the light of these facts.

352. In the Southern African subregion, Mozambique is linked to Malawi, Zimbabwe, Zambia, Botswana and Swaziland by railway originating from the ports of Maputo and Beira. The three Maghreb countries (Tunisia, Algeria and Morocco) in North Africa are inter-connected by rail and in West Africa, Cote d'Ivoire is linked to Burkina-Faso and Senegal to Mali. Similarly, Kenya is linked to Uganda and Ethiopia to Djibouti in East Africa. Yet the fact is that all of these are isolated links that do not form subregional or regional integrated railway networks.

353. The prospects for subregional harmonization and coordination are therefore fair for Southern Africa and the Maghreb coutnries, where integrated physical infrastructure already exist and there is a slim probability in West Africa, provided that the OCBN (Benin-Niger), RAN (Cote d'Ivoire-Burkina Faso) and the Senegal-Mali networks are eventually inter-connected.

354. At the continental levels the idea of a Pan-African railway network criss-crossing the region (like the Trans-African Highway network and as

provisionally being formulated by the UAR), is too far in the future and the probability extremely remote due to technical, financial, operational and economic considerations as to warrant current consideration of harmonization and coordination.

355. The inland water transport mode is very insignificant and extremely localized and limited in scope and therefore does not lend itself either to subregional or regional harmonization and coordination. It is better suited to bilateral and multilateral arrangements under the auspices of the various lake and river basin commissions.

356. In final summary, the situation and prospects for the harmonization on of the various transport modes in Africa is as follows:

(i) Roads and road transport has the best prospects for regional harmonization and coordination, through the ongoing and planned activities of the Trans-African Highways programmed and should be pursued to the logical conclusion;

(ii) Air transport, in spite of its small traffic volume, has good prospects and the inherent characteristics for surbegional/reginal harmonization and coordination of its operations, especially given the fact that its technical aspects are already well coordinated at the international and regional levels;

(iii) Maritime transport is extremely subregionalized with no immediate prospects for regional cooperation in operations and the only viable or rational approach seems to lie in subregional harmonization and coordination; and

(iv) Railways are extremely few and widely dispersed all over the continent and there is little or no harmonization/coordination at the subregional level, with even less prospects for regional harmonization/coordination in the foreseeable future, but there can be harmonization/coordination within localized areas in some subregions.

LIST OF REFERENCES

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2. Study of the harmonization and coordination of the various transport modes in the West African subregion (E/ECA/TRANS/45)

3. Study of the harmonization and coordination of the various transport modes in the North African subregion (E/ECA/TRANS/46)